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**Maternal History of Abuse and Maternal 'Mind-Mindedness' in a Sample of Mothers with severe mental illness treated in a mother-baby inpatient unit**

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# MAIN RESEARCH

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## Systematic Review

# Maternal History of Childhood Abuse and the Quality of Mother-Infant Interaction: A review of observational studies

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## **Abstract**

The objective of this paper is to systematically review the literature that has examined maternal self-reported history of abuse in relation to an observational assessment of infant-mother interaction. Electronic databases were searched and studies that met pre-defined criteria were included. A total of 13 studies (representing 12 independent samples) were included and assessed for quality using the EPHPP tool. Nine of the 13 studies (69% of reviewed articles) found a relationship between self-reported abuse and observed caregiving. Due to variation in sample characteristics and measurement the ability to compare studies is limited. Studies identified as having the highest methodological quality were most consistent, reporting an indirect effect of maternal abuse history on caregiving via parenting stress or depressive symptoms. This review would support the notion that self-reported abuse history in the mother is a risk factor for non-optimal caregiving behaviours; however there is a need for greater understanding of what pathways are responsible for this effect. The current review discusses strengths and limitations of the existing literature and offers suggestions for future research.

## Introduction

A wealth of research has demonstrated the importance of mother-infant interactions in relation to a variety of developmental outcomes for children (Alink et al., 2009; Lyons-ruth, Wolfe, & Lyubchik, 2008; Moss et al., 2011; Murray, Fiori-Cowley, Hooper, & Cooper, 1996; Murray, Woolgar, Cooper, & Hipwell, 2001). Furthermore, the influence of interactions within the infancy period in particular has been demonstrated from longitudinal studies that have shown the enduring impact of these early interactions, even when later parenting quality and other risks have been taken into account (Carlson, Jacobovitz & Sroufe, 1995; Dutra, Bureau, Holmes, Lyubchik, & Lyons-Ruth, 2009; Morrell & Murray, 2003; Murray, Halligan, Goodyer, & Herbert, 2010). This draws attention to early caregiving behaviours and the importance of understanding what may place a mother at risk for non-optimal interactions with her infant.

The ability of a mother to be responsive, sensitive and engaged with her infant relies on a sophisticated and co-ordinated behavioural response (Ainsworth, Bell, & Stayton, 1974). First, a mother must perceive her infant's cues, she must then appraise them as meaningful and as requiring a response, and then select a response from a range of possible behaviours based on what she ascertains the underlying need of the infant to be. The mother must also be able to monitor her response, assess and perceive when a chosen response is no longer needed (e.g., by correctly perceiving that the infant is no longer distressed) or when the selected response was not "right", and adjust her behaviour accordingly. The mother must do this while also balancing other competing demands and her own internal and external cues (George & Solomon, 2008). As a result of all that is required for caregiving behaviour, many factors may influence the quality of its execution. Difficulties may arise in the mother's ability to detect her infant's signals (Barrett & Fleming, 2011; Healy, Lewin, Butler, Vaillancourt, & Seth-Smith, 2015), in her appraisal of the infant's need (Leerkes, Parade, & Gudmundson, 2011), in balancing other competing motivational systems (George & Solomon, 2008) or in her ability to monitor her behaviour and be flexible (Main, 2000). As such, caregiving behaviours are complex and arise from interplay between biological (e.g., hormones), social (e.g., marital relationship, social support), interpersonal (e.g., attachment representations), cognitive (e.g., attention, executive functioning) and affective (e.g., mood) factors (Barrett & Fleming, 2011; Belsky, 1984; George & Solomon, 2008).

One factor that is assumed to influence these caregiving abilities is a mother's own experience of being cared for and protected in childhood. A number of different theoretical positions have considered the mechanism through which early experiences may influence the caregiving abilities of that individual when they become a parent. In particular is attachment theory, which has dedicated a great deal of conceptual and empirical inquiry to the intergenerational transmission of relationships (Bretherton, 1990; Main, Kaplan, & Cassidy, 1985). In addition to attachment research are more general theories of developmental psychology and psychopathology, as well as neurobiological perspectives of caregiving behaviours, which have considered how relational experiences might be transmitted through generations. The following section will briefly review these perspectives, offer a rationale for bringing these related, but different aspects of research together, and then outline the parameters of this review.

### **Experiences of Childhood Abuse and Attachment Theory**

Bowlby (Bowlby, 1969, 1973, 1980) postulated that interaction patterns with parents starting from the first year of life are what lead to the construction of "internal working models" of self and other from which the individual then interprets and experiences other attachment relationships. Thus, from this perspective, a mother when presented with the task of developing a relationship with her infant will be influenced by the nature of this internal working model of attachment in terms of guiding how she responds to and engages with her infant. Due to Mary Ainsworth's pivotal observational research in the 1970s (Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth et al., 1974) and the demonstrated importance of early 'sensitive' caregiving in the development of secure attachment relationships, interest shifted to understanding how individual differences in maternal responses could be explained.

It was then that research became interested in how a mother "represents" her own early attachment experiences and how that relates to the quality of the relationship that she develops with her child (Main et al., 1985). Indeed, research across a number of studies has demonstrated that maternal representations of attachment can explain a moderate proportion of her behavioural engagement with her infant. Adults who are themselves securely attached (or that is, have a secure state of mind with respect to attachment as measured by the Adult Attachment Interview) have been observed to engage in more sensitive caregiving practices and to develop secure attachment relationships with their own

children (De Wolff & van IJzendoorn, 1997; Madigan et al., 2006; van IJzendoorn, 1995). In contrast, adults with insecure states of mind with respect to attachment and who may devalue their early experiences (dismissing), be overwhelmed, confused or angry by their early experiences (pre-occupied) or remain 'unresolved' with regards to past trauma or loss, have been observed to struggle in various degrees in their ability to be openly available and responsive to the needs of their child.

Mothers with dismissing or preoccupied states of mind may be more likely to engage in various 'insensitive' behaviours such as intrusive or unresponsive caregiving (Isabella & Belsky, 1991). In addition to these generally 'insensitive' caregiving patterns are caregiving behaviours that have been specifically observed in mothers with unresolved states of mind. Individuals with unresolved states of mind have been found to have particularly high rates of childhood abuse (Bailey, Moran, & Pederson, 2007; Madigan, Vaillancourt, McKibbin, & Benoit, 2012; Stovall-McClough & Cloitre, 2006) and when talking about these experiences during the Adult Attachment Interview will demonstrate lapses in reasoning or discourse. It is hypothesised that these linguistic characteristics reflect the mother's unintegrated representations of meaning in relation to the event and that this fragmented representation can lead to unusual or contradictory caregiving responses (Main & Hesse, 1990). In particular, mothers with unresolved states of mind have been observed to engage in frightening, frightened or atypical behaviours when interacting with their infants, particularly when the infant displays attachment needs (Lyons-Ruth, Bronfman, & Parsons, 1999). These maternal behaviours are believed to be independent of maternal sensitivity (Moran, Forbes, Evans, Tarabulsy, & Madigan, 2008), and have been most strongly associated with disorganised infant-mother relationships (Fearon, Bakermans-Kranenburg, Van IJzendoorn, Lapsley, & Roisman, 2010; Van IJzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). It is hypothesized that mothers who have experienced loss or abuse in their own childhoods, and remain 'unresolved' with respect to these experiences, may be challenged by the infant's display of vulnerability and distress, due to the activation of disintegrated and powerful affect associated with their own early experiences. The consequence of the evocation of (or attempts to distance from) their own unresolved feelings can be a number of caregiving behaviours that are frightening for the infant or that result in the mother being unable to adopt the necessary parental role and modulate the infant's stress response (Lyons-Ruth et al., 1999; George & Solomon, 2008). In sum, attachment theory would suggest that there is

likely to be an impact of childhood abuse on the caregiving system and that this may manifest in specific types of early caregiving behaviour.

## **Experiences of Childhood Abuse and Mental Health**

Perspectives from developmental psychopathology would also suggest that early childhood abuse has the potential to undermine caregiving capacities. Research is increasingly demonstrating the myriad of psychological consequences of childhood trauma including impaired cognitive flexibility, attentional biases to threat and difficulties with emotional regulation (see Pechtel and Pizzagalli (2011) for a review). Childhood abuse is also highly associated with mental health disorder (Kessler et al., 2010; Keyes et al., 2012), in particular recurrent depression and trauma related symptomatology (Cloitre, Miranda, Stovall-McClough, & Han, 2005; Cloitre et al., 2009; Dorahy et al., 2014; Nanni, Uher, & Danese, 2012). Moreover, due to the commonly chronic nature of childhood abuse, it is often associated with more pervasive psychological sequelae, such as personality disorder or “complex PTSD”. Complex Post-traumatic Stress Disorder (PTSD) is characterised by nonspecific difficulties across a number of domains including emotional regulation, interpersonal functioning and identity (Herman, 1992). This diffuse psychological profile is mirrored by research that has shown that adults with childhood abuse histories tend to report high symptomology across a number of different domains, including mood and anxiety symptoms, substance misuse, dissociation and interpersonal relationships (Anda et al., 2006; Briere & Elliott, 2003; Powers, Cross, Fani, & Bradley, 2015). In light of the psychological and interpersonal consequences of childhood trauma, there is potential for any number of these factors to impact on the quality of caregiving behaviours.

Childhood trauma is not only associated with depression in general but also depressive symptoms in the perinatal period (Alvarez-Segura et al., 2014; Benedict, Paine, Paine, Brandt, & Stallings, 1999; Buist & Janson, 2001; Plant, Barker, Waters, Pawlby, & Pariante, 2013). The impact of depressed mood on caregiving has been consistently demonstrated with research showing that depressed mothers are less synchronous in their interactions with their infants, are more likely to be disengaged/withdrawn or intrusive, and provide less tactile stimulation to their infants (Field, 1998; Murray et al., 1996; Reck et al., 2004). Arguably, the impact of depression on caregiving could be related to disturbances in mood (e.g., reduced motivation, pleasure) or cognition (e.g., attention, cognitive flexibility) or both (i.e., emotion regulation).

In addition to symptoms of depressed mood (e.g., negative cognitions, reduced motivation), are cognitive deficits, particularly in areas of attention and executive functioning. Results from a recent meta-analysis suggest that the cognitive effects of depression may continue even in remitted patients (Rock, Roiser, Riedel, & Blackwell, 2014), highlighting that the cognitive profile of depression should not be underestimated. It also begs the question as to whether cognitive factors could explain why successful treatment of mood symptoms in postnatal depression is not always associated with improvements in the quality of infant-mother interaction (e.g., Forman et al., 2007; Murray, Cooper, Wilson, & Romaniuk, 2003). Thus, another way in which childhood abuse may impact the quality of the infant-mother relationship is in the form of depressive symptoms or cognitive correlates of depression that may undermine the ability of a mother to optimally engage with her infant.

The impact of trauma symptoms on caregiving has received comparatively less research attention than that of maternal depression and the research that does exist is mixed. Some research has reported relationships between trauma symptoms and self-reported parenting (Banyard, Williams, & Siegel, 2003; Muzik et al., 2013) and representations of the infant (Huth-Bocks, Levendosky, Theran, & Bogat, 2004; Schechter et al., 2008), where other research has not found a relationship with PTSD symptoms and observed caregiving (Lyons-Ruth & Block, 1996). Making sense of this literature is further complicated by the fact that not all of this research was in relation to maternal childhood abuse specifically, but also considered ongoing or more proximal abuse as well. Nevertheless, research would suggest that those who have been abused in childhood may have cognitive-affective difficulties that could interfere with caregiving. Research shows heightened attentional and affective (specifically amygdala) responses to threat (e.g., fearful faces), as well as reduced pre-frontal regulation of fear in those with childhood abuse histories (Dannlowski et al., 2012; Grant, Cannistraci, Hollon, Gore, & Shelton, 2011). In line with this, is research that has shown that females with a history of childhood abuse perform more poorly on tasks of cognitive flexibility than women with no abuse histories, but only under emotional conditions (Caldwell, Krug, Carter, & Minzenberg, 2014). Together, this suggests that individuals with abuse histories are not only more likely to be emotionally activated in response to emotional signals but may also be compromised in their ability to recruit cognitive resources at these times.

In sum, early childhood trauma may also impact the quality of the caregiving behaviours through depressive and trauma-related symptoms or through associated psychological

processes. One might expect the influence of these symptoms on caregiving to vary under different levels of stress or in the presence of specific infant cues.

### **Early Life Stress and Neurobiological Systems of Mothering**

Finally, increasingly research is elucidating the importance of early adverse experiences on the biological systems of mothering, including hormones (e.g., stress reactivity), and neural systems associated with reward and social behaviour (Barrett & Fleming, 2011). In primate and non-primate animal research there is evidence of the transmission of parenting quality (Champagne, 2008; Maestripieri, Lindell, & Higley, 2007; Suomi, 1997) and this research has shown early stress to be associated with dysregulated glucocorticoid responses and differences in serotonergic activity which in turn, influences caregiving behaviours. More recently, individual differences in these biological systems have also been described in human mothers. For example, maternal genotype (of the serotonin transporter gene) has been related to less sensitive caregiving, especially in mothers who also reported early childhood stress (Mileva-Seitz et al., 2012) and plasma and saliva oxytocin has been linked to self-reported attachment style and observed synchrony and engagement with the infant (Feldman, Gordon, & Zagoory-Sharon, 2011). Therefore, another reason why one might expect to observe a relationship between early adverse experiences and later caregiving practices is that early adverse experiences may undermine caregiving by making the parent less robust in the face of stress or interfere with the functioning of normative biological systems associated with caregiving motivation.

Thus, there is a strong theoretical rationale to predict that early life experiences, particularly negative childhood experiences like abuse, would place a mother at risk for non-optimal engagements with her infant. In spite of the varied theoretical arguments for an association between these two factors, relatively little empirical research has been dedicated to this topic, particularly studies that have involved observational measures of caregiving. One possible reason for the paucity of research on this topic is that predictors of observed infant-mother interaction quality have largely focused on other factors, such as maternal attachment status or postnatal depression (Field, 2010; Lovejoy, Graczyk, O'Hare, & Neuman, 2000; Madigan et al., 2006; Van IJzendoorn, 1995). At present, we are aware of no reviews or meta-analyses that have focused on the relationship between the mother's own self-reported experience of abuse in childhood and the quality of interaction with her infant.

## **Current Review**

The main aim of the current review is to collate research that has examined maternal self-reported history of childhood abuse and maternal caregiving behaviours to ascertain if the literature does support this hypothesised relationship. A secondary aim of the review is to determine the state of the literature with respect to possible mediators for such an association. The current review will also consider the extent to which the literature has accounted for confounding variables, particularly maternal depressive symptoms, in quantifying the strength of the relationship between maternal self-reported abuse history and observed parenting behaviours, due to the robust association between childhood abuse and subsequent adult depression (Nanni, Uher & Danese, 2014) and maternal depressed mood and impaired caregiving (Lovejoy, Graczyk, O'Hare & Neuman, 2000).

This review will focus on research that has used an observational measure of parenting and will exclude studies which only include self-reported measures of parenting, child abuse potential or substantiated child abuse. Observational measures of parenting are considered to be less influenced by bias (Bailey, DeOliveira, Wolfe, Evans, & Hartwick, 2012) and in older children have been shown to be better predictors of child outcome than parenting self-reports (Zaslow et al., 2006). In addition, the review will focus only on research that has conducted observations within the infancy period (i.e., children at or younger than 24 months of age) because of the importance of this period for subsequent child development and the associated developmental shifts in infant (and in turn, parenting) behaviour after the second year of life. Finally, this review sought to include studies where the definition of maternal early experience was as consistent and similar as possible by only including those studies that used a measure of abuse specifically, rather than early experience in general (i.e., perceived acceptance or rejection by parents). Although there is undoubtedly evidence that perceived emotional aspects of child experience impact psychological functioning and caregiving behaviour (e.g., Belsky, Youngblade, & Pensky, 1989; Crockenberg, 1987) only studies that included a measure of physical and sexual abuse were selected to ensure all studies could be identified through electronic searching and to optimise methodological precision.

## **Method**



## Procedure

### *Search Strategy*

Articles were primarily identified using PsycINFO and MEDLINE using the following search terms for the two main variables of interest: maternal history of childhood abuse (“child abuse”, “child maltreatment”, “child trauma”, “early life experience”, “adverse life experience”, “family of origin”, “child history”, “family history”) and observation of infant-mother interaction (“parenting”, “caregiving”, “infant-mother interaction”, “mother-child interaction”, “mother-child communication”, “infant-mother relationship”, “observation”, “maternal sensitivity”, “maternal behaviour”, “maternal responsiveness”). Search terms were used both as keywords and as words within abstracts and combined in various ways. Search terms were exploded (e.g., “child abuse” exploded to include specific forms of abuse) and wild cards used where appropriate. Searches were limited to studies within peer-reviewed journals and involving human samples, published from 1970 through until January 2015. This process was repeated in Web of Science but did not generate any additional relevant articles. A few papers were identified manually through Google Scholar and searching key journals (Child Maltreatment, Child Abuse & Neglect, Infant Mental Health Journal, Attachment and Human Development, Developmental Psychopathology). Finally, the reference lists of a number of loosely related reviews (e.g., Buist, 1998b; Laulik, Chou, Browne, & Allam, 2013; Lovejoy et al., 2000; Wilson, Rack, Shi, & Norris, 2008) were examined, in addition to reference lists of all identified papers.

### *Inclusion Criteria*

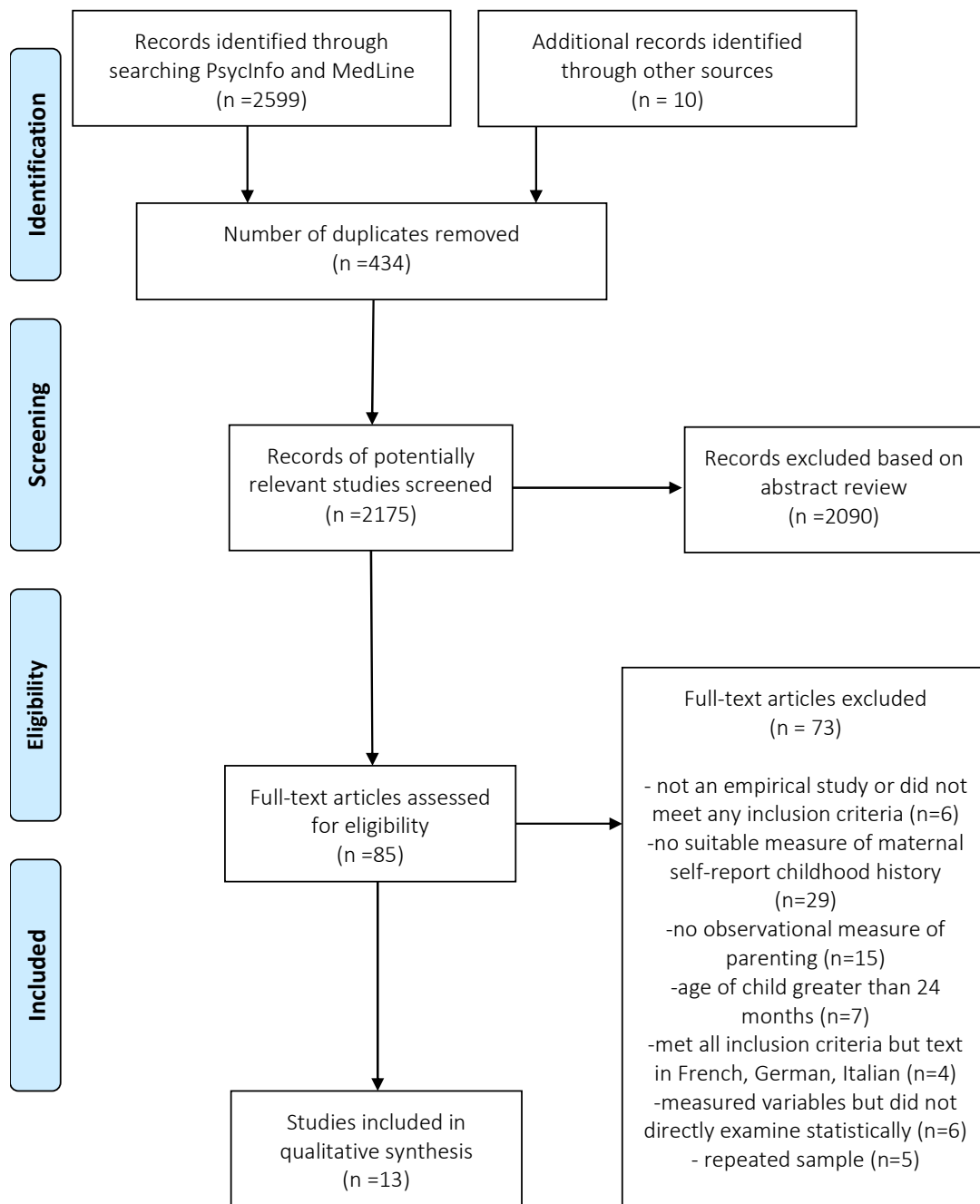
A total of 2609 articles were returned with 2175 records screened once duplicates were removed. Records were screened based on title and abstract to determine if the study met criteria for the present review 1) sample participants were a parenting population, 2) the measure of maternal childhood history was a self-report, 3) the measure of parenting was observational and 4) the mean age of the child was 24 months or younger at the time of observation. Studies that commonly arose within the search but did not meet inclusion criteria were studies with samples of maltreating parents where there was not a measure of parent’s own experience of abuse in childhood, or which focused on child abuse potential or substantiated child abuse rather than observed mother-child interactions. Other reasons for

exclusion were studies that only used self-report measures of parental behaviour/attitudes/self-efficacy, studies where the definition of trauma exposure was not restricted to childhood (e.g., lifetime trauma exposure) and studies where the infant age range extended beyond, and the mean age was greater than, 24 months (e.g., Lewin & Bergin, 2001).

Those records where it was not clear from the abstract if they met inclusion criteria were retained and the full-text was acquired. Where multiple publications of the same sample existed [e.g., articles from the Maternal Anxiety in Childbearing Years (MACY) and Maternal Adversity, Vulnerability and Neurodevelopment (MAVAN) studies], only one was selected to include in this review. One exception to this was a study that examined different aspects of maternal caregiving (maternal sensitivity and frightened/frightening maternal behaviour) in two separate publications (Jacobvitz, Leon, & Hazen, 2006; Leon, Jacobvitz, & Hazen, 2004).

Of the 85 studies that were examined closely, only 13 were included in the final review. Figure 1 displays the flow of studies through the review selection process. Of note is that there are a number of papers that measured the two relevant variables but did not report associations between them, as this was not the primary focus of the study (e.g., Beverley Cassidy & Mark Zoccolillo, 1996; Cassidy et al., 2010; Emery, Paquette, & Bigras, 2008; Pajulo, Pyykkönen, Kalland, Sinkkonen, Helenius, & Punamäki, 2011). In addition, a number of intervention studies measured maternal childhood abuse but did not examine it in relation to caregiving independently, and thus these were also excluded (e.g., Huebner, 2002).

Figure 1. PRISMA Flowchart



## Data Extraction and Quality Assessment

All included articles were reviewed following the PRISMA checklist (Moher, Liberati, Tetzlaff, & Altman, 2009) and key study characteristics were extracted. A summary of the extracted study and measurement characteristics are outlined in Tables 1 and 2. In addition, each paper was quality assessed using a modified version of the EPHPP (Effective Public Health Practice Project, 2007) Quality Assessment Tool for Quantitative Studies (see Appendix A.1). The EPHPP was selected because it provided an appropriate set of domains to be evaluated for an observational study and has been found to have very good reliability in terms of the overall quality rating (Armijo-Olivo, Stiles, Hagen, Biondo & Cummings, 2012). Additional criteria were included within the validity and reliability domains of the measure to account for specific issues relevant to observational parenting research such as inter-rater reliability and the quality of the coding scheme used. The EPHPP measure was used to assess studies across five domains: representativeness of the sample, methodological or statistical control of confounding factors, reliability and validity of measurement tools, blindness of assessors, and suitability of analyses<sup>1</sup> to inform the questions of this review. Studies that were longitudinal or represented a sample that had participated in an intervention were also rated on an additional three-point scale to assess how those who dropped out were accounted for and the degree of attrition. In terms of confounding factors, particular attention was given to maternal depression in addition to demographic variables because of the high overlap between childhood history of abuse and depression and the impact of depression on caregiving. Studies received a quality score for each domain ranging from 1-3 (1: strong to 3: weak). Criterion used for each domain is described in the Appendix (A.1). Based on these scores an overall quality rating was given. A 'strong' overall rating was given when there was no weak ratings across any domain. A 'moderate/acceptable' rating was given when one domain was deemed 'weak'. A 'weak' overall rating was given when two or more domains were rated as weak.

## Results

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<sup>1</sup> It should be noted that ratings of statistical analyses do not necessarily reflect the appropriateness of the analyses for the research questions that were the focus of the paper. This item as rated here reflects the quality of the analysis to determine an association between maternal childhood abuse experiences and quality of the interaction.

The following sections describe the included studies in terms of design, sample characteristics, measurement and main findings and should be read in conjunction with Tables 1 and 2.

## Overview

The twelve independent studies (excludes the repeated sample of Jacobvitz et al. (2006)) represent a total sample of 6, 212 mother-infant dyads, with sample sizes ranging from 41 to 4,351 participants. Nearly all studies were conducted in North America (75%), in addition to two studies from Europe (UK & Germany) and one from Australia.

## Design

The majority of studies (62%) were longitudinal with the remainder using a cross-sectional design. Four studies represented samples that were engaged in some form of home-visiting programme aimed at improving maternal and infant outcomes. Of the intervention studies, all participants had received the intervention or the authors accounted for exposure by demonstrating no difference between key variables in those who did or did not receive the intervention.

## Sample Characteristics

There was variation in terms of socio-economic risk across studies. Four studies specifically targeted at-risk mothers (young parents or those at risk for social service involvement), one study included a psychiatric in-patient sample that was described as of relatively low socio-economic status (but did not formally report), four studies represented low-risk middle class samples and the remaining four were diverse in risk or descriptions of economic status were not explicitly stated. The mean age of mothers for the majority of studies ranged from 26-33 years, with the exception of three studies where the mean age of mothers was below 21 years.

For those studies where the main focus was to examine a relationship between maternal childhood abuse and the quality of caregiving, the majority of studies matched groups or otherwise controlled within their analyses for demographic factors. Two studies (Nuttall, Valentino, & Borkowski, 2012; Stacks et al., 2014) did not examine these variables as the main

focus of the study and therefore the associations reported between the variables did not control for demographic factors.

There was variability in the degree to which studies measured and controlled for maternal depression. Sixty-nine percent of all studies included a measure of depression, although of these, one study (Dixon, Hamilton-Giachritsis, & Browne, 2005) did not use a standardised measure of depressive symptoms and one (Leon et al., 2004) used the depression subscale from the Parenting Stress Index. Within the studies that did include a measure depression, most described or accounted for the potential impact of depression on the quality of the infant-mother relationship and are discussed in greater detail within the main findings.

## **Measurement**

### *Observation Characteristics*

The age of infant at the time of observation varied between studies. Eight of the twelve independent studies involved infants under 12 months of age, with the remainder involving infants between 12-18 months. Nearly all (75%) observations took place in the home, with the average length of observation being 30 minutes (Range: 5-120 minutes). All but two studies video-recorded the infant-mother interaction for later coding. One study took place within an in-patient setting and did not report details about how the observation was conducted. Only five studies used purely unstructured interactions (asking mothers to play with their child as they normally would), the remainder used a combination of tasks including some form of divided attention (e.g., completing questionnaire during play), teaching or stressor task. No studies discriminated between different components of the observation when reporting caregiving results. Two studies (Dixon et al., 2005; Lesser & Koniak-Griffin, 2000) measured caregiving more than once within the infancy period. The most common domain of parenting measured across studies was sensitivity; however the precise definition and coding scheme used varied. Three studies used more than one coding scheme and combined scores, either creating composite variables (Madigan, Wade, Plamondon, & Jenkins, 2015) or doing so statistically, using cluster or principal components analysis (Driscoll & Easterbrooks, 2007; Lyons-Ruth & Block, 1996). Most studies used standardised coding schemes that have previously demonstrated validity and reliability. An exception is the study from Stacks et al. (2014) who developed a scheme specific to the MACY project. Nevertheless, this scheme is based on previously well-established parent-infant observation measures, was standardised

and closer inspection suggests that dimensions were consistent with the Ainsworth Scales of sensitivity (e.g., sensitivity, cooperativeness, accessibility, acceptance). Two studies based their ratings on observations during a clinical visit (Dixon et al., 2005) or within a clinical setting (Buist, 1998a) and were not video-recorded precluding robust coding and double rating. Dixon et al. (2005) report that all assessors completed training that included a two-day workshop on parent-infant observation but there is no mention of assessors achieving reliability for the use of any particular tool. Buist (1998a) coding scheme is described as a modified version of the Bethlem Mother-Infant Interaction scale (Stocky, Tonge, & Nunn, 1996) but no details are provided about the degree to which raters (nursery nurses) were trained in the use of this tool.

All but one study had raters who were unaware of maternal characteristics or study hypotheses and good to high inter-rater reliability. Only in the large study by Dixon et al. (2005) were ratings given by professionals involved in the care of the families and thus the raters were aware of maternal characteristics. Dixon et al. (2005) report acceptable to high internal consistency for each subscale of parental behaviour but did not have a second rater. Finally, it was unclear if Lesser and Koniak-Griffin (2000) had a second rater as they did not report inter-rater reliability in the publication but do state that all raters were unaware of the mother's abuse history.

#### *Maternal History of Childhood Abuse*

In line with the inclusion criteria of this review, measures of maternal childhood abuse across studies were self-reports, and for most, the measure of abuse was restricted to physical and/or sexual abuse in childhood. Exceptions to this are three studies that used overall scores on the Childhood Trauma Questionnaire (CTQ; Bernstein & Fink, 1998). One of these, Gonzalez, Jenkins, Steiner, and Fleming (2012a), did not exclusively use the CTQ but created a composite score which combined the CTQ with a measure of consistency in care (the Life History Calendar; Caspi et al., 1996). Based on these composites, mothers were categorised as experiencing one or two forms of early life experience. Early life experience was defined as moderate-severe abuse as measured by the CTQ or more than one family arrangement as measure by the Life History Calendar. It was not clear from the reported results how many mothers were categorised as experiencing one form of abuse, multiple family arrangements or both.

Of those studies that did not use a standardised measure of childhood maltreatment, three used a measure of childhood abuse based on descriptions given during the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996). These studies rated the severity of abuse described at any time during the AAI using standardised criteria. These ratings were made by an independent rater who was unaware of AAI status. In contrast to studies by Nancy Hazen and her research group, Lyons-Ruth and Block (1996) describe the inclusion of additional questions within the AAI to specifically prompt for abuse related experiences.

Lesser and Koniak-Griffin (2000) also used an interview to measure childhood abuse but instead of using the AAI, asked questions adapted from the Conflict Tactics Scale (Straus, Hamby, Boney-McCoy, & Sugarman, 1996) and Finkelhor (1986) questions on sexual abuse. Responses were then rated based on operationally defined criteria and only those with severe ratings were classified within the abused group. Buist (1998a) measured abuse as part of a psychiatric interview completed at admission to the inpatient ward and used operationalised definitions of sexual, physical and emotional abuse. Dixon et al. (2005) also used an interview format to measure abuse; however, in this case it was in the context of an 'Index of Need' assessment as part of the home visiting programme. This involved one single question about whether or not they had experienced physical or sexual abuse in their own childhood and no definitions were provided.



Table 1. Overview of Included Studies

Year	Study	Country	Design	Sample Characteristics						Relationship between two variables	Quality Rating <sup>2</sup>	
				N	Type	Mean maternal age	% Minority	% impoverished	Measure of depression			
1996	Lyons-Ruth & Block	USA	L	41	Selected. Referred by health or social services.	25.6	16%	66%	Not reported	Yes. Overall severity of abuse was related to greater maternal withdrawal. Severity of SA specifically associated with maternal withdrawal. Severity of PA associated with hostile-intrusive behaviour.	8	Mod
1998	Buist	Australia	CS	56	MBU sample.	28.3	not reported	Low SES <sup>3</sup>	Yes	Yes. Abuse history was related to poorer rated quality of mother-infant interaction.	12	Weak
2000	Lesser & Koniak-Griffin	USA	L	95	Community sample. Adolescents recruited from public health. Agreed to participate in home visiting program.	16.8	79%	Most under poverty line	Yes	No. Abuse history not associated with caregiving. Abuse history was associated with depression, and this was associated with caregiving.	8	Strong
2004	Leon et al.	USA	L	109	Community sample. Recruited from antenatal classes.	29.5	16%	6%	Yes	No. Abuse history not associated with caregiving sensitivity.	7	Mod
2005	Dixon et al.	UK	L	4351	Universal community sample. All infants born over 38 month period in an area of England were eligible.	Not reported (7% were 21 or younger)	< 5%	Not stated	Yes	Yes. History of abuse predicted quality of caregiving.	9	Weak
2006	Jacobovitz et al. ±	USA	L	116	Community sample. Recruited from antenatal classes.	29	18%	9%	No	No. Only <i>unresolved</i> childhood abuse predicted FR behaviour.	7	Mod

<sup>2</sup> Overall quality score based on EPHPP quality assessment (see Method section); lower scores indicate better quality

<sup>3</sup> Authors state that MBU admissions tend to be of women of lower socio-economic class

2007	Driscoll & Easterbrooks	USA	CS	107	Community sample. All first time young mothers were eligible. Participated in home visiting programme.	19.6	47%	Mean per capita income below the poverty line	Yes	Yes. PA associated with inconsistent-directive parenting.	7	Strong
2007	Moehler et al.	Germany	CS	119	Universal community sample. All births over a two year period.	Not reported	Not reported	Not reported	No	Yes. Abused mothers more likely to display intrusiveness.	6	Strong
2012	Nuttall, et al.	USA	L	374	Community sample. High-risk first time adolescent and adult mothers recruited from primary care.	21.47	82%	Mean income under poverty line	No	Yes. Association between abuse and caregiving within male infants only.	9	Weak
2012	Pereira, et al.	Canada	CS	291	Community sample. Recruited from children's centres.	33.4	33%	Mean income-middle class	Yes	Yes. Overall abuse, PA and emotional neglect associated with less sensitive caregiving. Parenting stress mediated the relationship between maltreatment history and sensitivity.	5	Strong
2012	Gonzalez et al.	Canada	CS	89	Community sample. Recruited from antenatal clinics.	31.8	32.8	7.8%	Yes	Yes. Childhood abuse was indirectly related to maternal sensitivity via HPA reactivity.	5	Strong
2014	Stacks et al.	USA	L	83	Community sample but selected for perinatal depressive/PTSD symptoms or difficult childhood experiences. Recruited from antenatal clinics.	30.4	27%	18%	Yes	No. No direct association between abuse history and maternal sensitivity.	9	Moderate
2015	Madigan et al.	Canada	L	490	Universal Community Sample. All newborns born within a two year period.	32.7	43%	Not reported <sup>4</sup>	Yes	Yes. No direct effect but indirect effect of PA on responsive parenting via depressive symptoms.	5	Strong

Abbreviations: L= longitudinal design; CS=cross-sectional design; MBU=mother-baby unit; SES=socio-economic status; SA=sexual abuse; PA=physical abuse; EA=emotional abuse; FR= frightening/frightened; HPA=hypothalamic-pituitary axis

<sup>4</sup> Although value not reported in the text, authors indicate that SES was controlled for in analyses

Table 2. Measurement Characteristics of Included Studies

Study			Observation Characteristics						Abuse Measurement		
						Coding Scheme					% abuse <sup>5</sup>
	Infant age	Infant Gender (% male)	Setting	Obs Length	Structure	Measure	Domains of Parenting	Blind coders	Instrument	Type of Abuse <sup>6</sup>	
Lyons-Ruth & Block (1996)	18 months	56%	Home	40 mins	Unstructured	Ainsworth Sensitivity Scales and Crittenden Scales	Maternal Involvement and Hostile-Intrusiveness	Yes	Interview- additional abuse questions included based on Antecedent Experiences Questionnaire during the AAI	PA, SA (definitions based on social services guidelines)	47%
Buist (1998)	Mean 3.9 months	Not reported	In-patient hospital	Not clear	Unstructured	Monash Scale of Mother-Infant Interaction	Includes quality of physical contact, play, feeding, routine/safety	Yes	Clinical Interview – questions with operationalised criteria	SA, PA and EA	50% SA 16% PEA
Lesser & Koniak-Griffin (2000)	4-6 weeks, 6 months, 12 months	-	Home	Not stated	Structured	Nursing Child Assessment Teaching Scale	Overall score (sensitivity to cues, alleviation of distress and socio-emotional growth fostering and cognitive growth fostering)	Yes	Interview- questions adapted from Conflict Tactics Scale and Finkelhor questions on SA	PA & SA (study specific definition)	62%
Leon, Jacobovitz & Hazen (2004)	8 months	-	Home	20-30 mins	Structured-play, feeding and divided attention	Ainsworth Sensitivity Scales (adapted)	Sensitivity	Yes	AAI	PA & SA (defined using AAI criteria)	25%

<sup>5</sup> proportion of sample with an abuse history

<sup>6</sup> Included in analyses

Dixon, Hamilton-Giachritsis & Browne (2005)	4-6 weeks and 3-5 months	52%	Home	30 mins	Unstructured	3 point rating scale based on CARE index	Sensitivity	No	As part of an 'index of need' assessment –single question if they had experienced physical and/or sexual abuse in their own childhood	PA or SA under 16 years of age (no definitions provided)	3%
Jacobovitz, Leon & Hazen (2006)±	8 months	-	Home	30-40	Structured-feed and play	Main & Hesse (1995)	FR parental behaviour	Yes	AAI	PA & SA (defined using AAI criteria)	Not clear
Driscoll & Easterbrooks (2007)	18 months	54%	Home	5 mins	Unstructured	Emotional Availability (EAS) Scales and Joint Attention (JA)	3 patterns of maternal behaviour on combination of EAS & JA scores: sensitive-engaged, inconsistent-directive, intrusive-prohibitive	Yes	Parent-Child Tactics Scale	PA items only	Not clear
Moehler, Biringen & Poustka (2007)	5 months	53%	Lab	10 mins	Unstructured	EAS	Sensitivity, Structuring, Non-intrusiveness, non-hostility	Yes	CTQ	Scored above cut off for moderate-severe PA or SA (for abused group)	49% <sup>7</sup>
Nuttall, Valentino & Borkowski (2012)	18 months	51%	Home	20 mins	Unstructured	Landry et al. (1997)	Contingent responsiveness and warm sensitivity	Yes	CTQ	Scales of PA & SA	35%
Pereira, Vickers, Atkinson, Gonzalez, Wekerle, & Levitan (2012)	16 months	51%	Home	120 minutes	Structured (frustration task and divided attention) and unstructured components	MBQS	Sensitivity	Yes	CTQ	All scales	7% PA <sup>8</sup> 11% SA

<sup>7</sup> 8% of total sample who replied to postal recruitment

<sup>8</sup> Proportion of participants with moderate to extreme scores on PA or SA scale

Gonzalez, Jenkins, Steiner & Fleming (2012)	2-6 months	48%	Home	30 mins	Unstructured & divided attention	Ainsworth Sensitivity Scales	Sensitivity	Yes	CTQ and LHC combined	Moderate-severe overall CTQ score and more than one living arrangement	46% total (30% one; 16% both)
Stacks et al. (2014)	16 months	Not stated	Lab	10 mins	Unstructured & Structured (clean up task)	MACY Infant Parent Scoring System	Sensitivity & Over-controlling-intrusive	Yes	CTQ	Overall score	38% <sup>9</sup>
Madigan et al. (2015)	18 months	51%	Lab	15 mins	Structured & Unstructured	CARP & PARCHISY	Responsive behaviour composite	Yes	CEVQ	Scales of PA & SA	10% SA 20% PA

Abbreviations: Obs=observation; AAI=Adult Attachment Interview; CTQ=Childhood Trauma Questionnaire; LHC=life history calendar; MACY=Maternal Anxiety in the Childbearing Years; CARP=Coding of Attachment Bearing Parenting; PARCHISY= Parent-Child Interaction System; CEVQ=Childhood Experience of Violence Questionnaire

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<sup>9</sup> Severe maltreatment

## Main Findings

### *Direct association*

Six of the twelve studies demonstrated a direct association between maternal history of childhood abuse and maternal behaviour. Within Lyons-Ruth and Block (1996) high-risk sample of mothers who were referred for intensive home-visiting, those mothers who had experienced more severe abuse in their own childhood were more likely to display low levels of involvement (maternal withdrawal) with their infant during a home observation ( $r = -.33$ ,  $p < .03$ ). This effect was particularly strong for sexual abuse ( $r = -.35$ ,  $p < .05$ ) whereas the severity of other abuse experiences, including physical abuse, did not reach significance. In contrast, severity of physical abuse in childhood was significantly associated with hostile-intrusive behaviour ( $r = .31$ ,  $p < .05$ ), where the overall severity of childhood abuse was not, nor was sexual abuse or neglect. These effects remained when regression analyses were run to include overall demographic risk factors (ethnicity, age, marital status, income, parity). Although sexual abuse was associated with demographic risk, the relationship between sexual abuse and maternal withdrawal remained significant after accounting for demographic risk. Although depression has been reported in other publications describing this cohort (Lyons-Ruth, Connell, Grunebaum, & Botein, 1990), the authors did not include depressive symptoms in this investigation, leaving some ambiguity about the extent to which these specific abuse-parenting style relationships would remain if maternal mood was also taken into account.

Buist (1998a) reported a significant difference between the abused and non-abused MBU mothers in terms of observed maternal behaviour ( $p < .05$ ). The author does not report correlation co-efficients but examination of the means suggests the effect size was moderate. There was no difference in maternal behaviour between mothers with a sexual abuse history versus those with a physical or emotional abuse history, but it is not clear to what extent mothers may have experienced more than one form of abuse within these categories. All mothers in this study had a primary diagnosis of major depression, adjustment disorder or atypical depression (DSM-IV; APA, 2000) and depressive symptoms were measured using the Beck Depression Inventory. It is stated that the abused group of mothers reported greater depressive symptoms but the author does not report associations between depressive symptoms and observed maternal behaviour.

Dixon et al. (2005) found a relationship between mother's report of abuse in childhood and observed maternal behaviours in the home at two time periods within the first year of life (odds ratio = 3.63). In addition, a number of risk factors (young maternal age, parental history of mental illness, depression and violence in the home) were all found to partially mediate the effect of abuse on caregiving behaviour. Although these risk factors were not based on standardised measures, a self-reported history of mental illness and domestic violence were particularly significant in mediating the relationship between history of abuse and caregiving behaviours when caregiving was dichotomised to those who displayed poor caregiving at both time points versus those who did not. When all three risk variables were controlled the effect of the model was reduced and the direct pathway between abuse history and caregiving behaviour was no longer significant.

In Driscoll and Easterbrooks (2007) community sample of young mothers, those with a history of physical abuse were twice as likely as mothers with no such history (odds ratio = 2.01) to engage in inconsistent-directive caregiving specifically. These mothers differed from mothers who were sensitive and provided a moderate level of scaffolding (sensitive-engaged group) and mothers characterised by high levels of intrusiveness and prohibitions (intrusive-prohibitive group) in that they showed greater impairment in being able to optimally structure the interaction and follow the infant's lead. There was no effect of history of abuse on the likelihood that mothers would engage in intrusive-prohibitive caregiving behaviours. Although depressive symptoms were also associated with the likelihood of being in the inconsistent-directive group (odds ratio: 1.8), prior analyses had indicated no significant difference between parenting clusters on depressive symptoms or other demographic variables.

Moehler, Biringen, and Poustka (2007), in their community sample of German women, also reported a significant effect of maternal history of abuse on caregiving behaviours, but this was specific to the intrusive dimension of the Emotional Availability Scales (Biringen, Robinson, & Emde, 2000). Mothers who had experienced a childhood history of physical or sexual abuse scored lower on the non-intrusiveness scale ( $M=3.18$ ,  $SD=1.12$  compared with  $M=3.60$ ,  $SD=1.07$ ),  $\chi^2=6.81$ ,  $p=.02$ . This effect could not be explained by demographic factors as the abused and non-abused groups were matched for child gender, marital status, maternal education and parity; however no measure of depressive symptoms was included.

Pereira et al. (2012) report an association between overall CTQ scores and maternal sensitivity as measured using the Maternal Behaviour Q-Sort (MBQS; Pederson, Moran, & Bento, 1999) ( $r = -.13, p < .05$ ). Results indicated a particularly strong association between the physical abuse subscale of the CTQ and sensitivity scores ( $r = -.17, p < .005$ ) and a smaller but significant association between the emotional neglect subscale and maternal sensitivity. These results were not confounded by associations with marital status, family income, infant gender or parity. There was however an association between CTQ scores and parenting stress. In this sample, both parenting stress and maternal history of abuse significantly predicted maternal sensitivity, and mediation analyses showed that the direct effect of maternal abuse history was no longer significant once the effect of parenting stress was taken into account. The possibility that parenting stress could also serve as a potential moderator of this association was also explored, but the model was not significant. Mediation analysis was repeated using depressive symptoms as a potential mediator but this model was not significant.

#### *Indirect or partial association*

Three studies reported an indirect or partial effect of maltreatment history on caregiving behaviour. Nuttall et al. (2012) did not set out to examine the effect of maternal history of abuse in relation to caregiving specifically, but rather the intergenerational transmission of parentification or role-reversal within familial relationships. However, as part of this investigation, the authors included a measure of general maltreatment history as a control and conducted analyses separately by gender. Correlations indicate that mothers with greater experiences of childhood physical or sexual abuse displayed less warm-responsiveness in home interactions with their infants, but only if infants were male ( $r = -.22, p < .05$ ). Given that the authors only measured general maltreatment history as a control variable in this study, they do not report how demographic variables were related to either the caregiving variable or CTQ scores.

Two different Canadian samples observed no direct effect of maternal history of abuse in relation to caregiving, but did find an indirect relationship via other related variables. Using path analysis, Gonzalez et al. (2012) reported no direct effect between maternal early life experiences of abuse and/or multiple family arrangements and maternal sensitivity, but did report a significant indirect effect when HPA function (higher levels of diurnal cortisol) was



tested as a mediator between the two variables ( $\beta = .22, p < .05$ , abuse to HPA function;  $\beta = -.22, p < .05$ , HPA function to maternal sensitivity). The effect emerged even controlling for depressive symptoms and household income, which were the only demographic and mood variables significantly associated with sensitivity. In another sample, Madigan et al. (2015) used path analysis in relation to data from a longitudinal dataset and observed that the relationship between maternal history of abuse and responsive maternal behaviours only existed via depressive symptoms ( $\beta = .18, p < .01$ , abuse to maternal depression;  $\beta = -.16, p < .05$ , depression to caregiving). This effect was specific to physical abuse and remained even when the effects of household income, child gender, maternal age and sexual abuse history were controlled. In contrast to physical abuse, depression did not emerge as a significant mediator between sexual abuse and responsive maternal behaviour.

#### *No association*

Four studies failed to find any association between mother's self-report history of childhood abuse and current caregiving behaviour. Within Lesser and Koniak-Griffin (2000) high-risk adolescent sample, childhood physical and sexual abuse was unrelated to home observations of maternal behaviour using the Nursing Child Assessment Teaching Scale (Barnard, 1978). Although those mothers who had been abused were more likely to be depressed and depression was associated with caregiving behaviour at the first observation at 4-6 weeks postpartum ( $r = -.26, p = .04$ ), no mediation or moderation analyses were completed.

Stacks et al. (2014) also failed to find an association between maltreatment history and maternal sensitivity in their sample of women selected to participate in a longitudinal study examining the effect of perinatal mental health (depressive and post-traumatic stress symptoms) and early childhood abuse in relation to the infant-mother relationship. The focus of this study was to examine the relationship between reflective functioning, maternal sensitivity and infant attachment security, but in addition to these factors associations between childhood abuse history and maternal sensitivity were also examined. Correlations revealed no significant relationship between overall CTQ scores and either sensitive ( $r = -.07$ ) or intrusive ( $r = .06$ ) maternal behaviours, and these associations were reported without demographic factors being partialled out. A composite of demographic risk (single parent, young maternal age, low education, poverty) was associated with parenting. Childhood abuse was significantly associated with trauma symptoms and depressive symptoms in the sample

(respectively,  $r=.22$ ,  $p<.05$  and  $r=.31$ ,  $p<.01$ ), but these symptoms were unrelated to caregiving sensitivity.

Finally, two papers involving the same sample of low risk mothers, found no association between those who had experienced severe physical or sexual abuse in childhood and two aspects of maternal behaviour. First, results are reported in relation to maternal sensitivity and results from regression analyses indicate that mothers did not differ in observed sensitivity if they had a history of physical or sexual abuse in childhood (Leon et al., 2004). Similarly, in their subsequent publication (Jacobvitz et al., 2006), when severity of physical or sexual abuse was examined in relation to frightened or frightening (“FR”) maternal behaviour there was no association. It was only if mothers were unresolved with respect to abuse (as measured during the Adult Attachment Interview) that abuse was related to FR behaviour ( $\beta=.35$ ,  $p<.001^{10}$ ). The influence of unresolved status remained when other risk factors (loss of a parent, severity of abuse, number of frightening experiences) were controlled.

### Quality Assessment of Included Studies

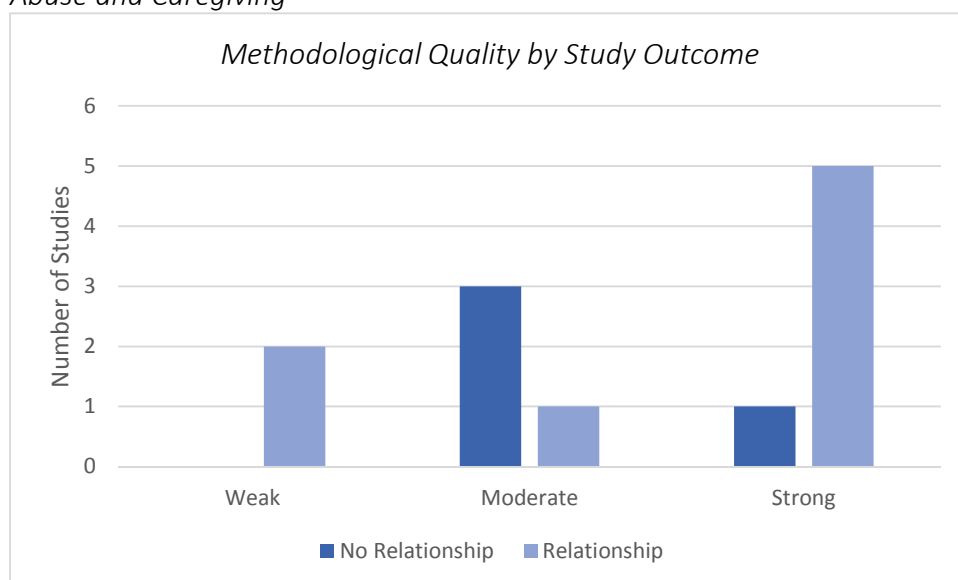
Methodological quality was assessed using an adapted version of the EPHPP tool (2007) for quantitative studies. Each study received a score for each methodological domain (sample, confounds, tools, bias, analyses and attrition) as well as an overall quality rating (see last column of Table 1 noting that lower scores indicate higher quality). Figure 2 reflects the quality of the study in terms of whether or not a significant association between maternal abuse history and caregiving was found. Figure 3 in the Appendix (A.2) demonstrates the strengths and weaknesses of each study and highlights the variation in quality even between those studies with the same overall quality rating. A total of six studies (46% of those included in this review) achieved an overall ‘strong’ quality rating, with three of these studies receiving low scores across all domains, indicative of the highest quality. The remaining studies were found to be of moderate (N=5) or weak (N=2) quality. Major limitations associated with a weak or moderate overall rating were less generalizable samples (N=6), the use of less rigorous assessment tools (N=2), a lack of blind assessors (N=2), failure to account for the

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<sup>10</sup> The regression co-efficient was only reported for any unresolved status (i.e., loss or abuse); however the authors state in the discussion that analyses were repeated for loss and abuse separately and this relationship remained significant

influence of measured or non-measured confounding variables (N=6) and insufficient statistical analyses to draw clear conclusions (N=3).

*Figure 2. Methodological Quality and Relationship between Maternal History of Abuse and Caregiving*



## Discussion

The current review sought to collate and assess the literature that has examined maternal history of childhood abuse in relation to observational caregiving behaviours within the first two years postpartum. A specific aim of this review was to determine if there is empirical support for the theoretical association between maternal childhood abuse experiences and later caregiving risk. In particular, this review considered the extent to which this association existed apart from confounding variables by systematically examining if studies had accounted for factors known to be associated with childhood abuse and caregiving (especially maternal depression and socio-economic risk). A secondary objective was to describe potential mechanisms for the association between self-reported childhood abuse and caregiving to guide future research. The current review is distinct from other reviews which have examined parental abuse history in relation to later perpetration of maltreatment (Thornberry, Knight, & Lovegrove, 2012). Furthermore, this review wished to exclusively examine research that has measured caregiving from observation rather than studies which have reported child abuse potential or self-reported parenting variables, and to focus on

caregiving behaviours within the infancy period. A total of 13 studies were identified and met inclusion criteria for the current review. This small number of studies is consistent with another review that examined personality disorder in relation to observational parenting (Laulik et al., 2013) and is likely a reflection of the greater resources required to conduct observational research, especially where the effect may be expected to be small and larger samples are required.

## Summary of Main Findings

Although there was variation in methodological quality across studies, of those that found an effect ( $n=8$ ), five were rated as strong. Of those, three studies had especially strong methodological quality (Gonzalez et al., 2012; Madigan et al., 2015; Pereira et al., 2012), and all found an indirect effect of maltreatment history on caregiving via parenting stress (subjective reports or biological stress reactivity) or depressive symptoms. These studies were comprised of a representative sample, used well-validated measures with raters unaware of the participant's characteristics and used statistical analyses and/or methods that controlled for potential confounding factors. A total of 870 participants are represented across these three studies and findings show a small but significant effect of maternal history of maltreatment on later parenting behaviour through maternal (psychological or biological) factors. Interestingly, of those studies that did find a direct association between maternal history of abuse and caregiving behaviour, a substantial proportion were samples of higher risk (i.e., due to young maternal age, poverty, mental illness) and potential indirect pathways to explain these associations were not tested. Of those that recruited mothers of higher risk (Buist, 1998a; Driscoll & Easterbrooks, 2007; Lesser & Koniak-Griffin, 2000; Lyons-Ruth & Block, 1996; Nuttall et al., 2012), it was only the Lesser study that did not find a direct effect; however this study did report that chronicity of depressive symptoms was associated with the abused group and that chronicity of depression was associated with lower caregiving scores at both observations. The study did not conduct any mediation analyses to test if depressive symptoms could account for an association between maternal history of abuse and caregiving. More recent studies in this review (e.g., Gonzalez, Jenkins, Steiner, & Fleming, 2012b; Madigan et al., 2015) suggest that modern ways of thinking about intervening variable effects (e.g., Hayes, 2009) will help to elucidate mechanisms of transmission by not prematurely precluding investigation of indirect effects (e.g., when there is no evidence of a simple association between maternal history of abuse and caregiving outcomes).

Of the total 13 studies reviewed, the majority reported some kind of association between maternal history of abuse and observed caregiving. However, even with attempts to select relatively comparable studies in this review (e.g., in terms of infant age and definition of maternal abuse), comparisons are still difficult due to variations in measurement and varying characteristics of the samples. Studies included in this review varied in terms of how abuse was measured, with the majority using questionnaires (most commonly the Childhood Trauma Questionnaire) and a proportion using an interview format. Although most studies focused on physical abuse, sexual abuse or both, there were three studies that included all items of the CTQ and one that also included a measure of 'consistency of care' (defined as the mother having lived with both biological parents until age 16). It is not clear from these studies if there is something specific about experiences of sexual and physical abuse that compromises caregiving capacity, if the effects of these experiences could be accounted for by emotional abuse or neglect (Bailey et al., 2012) or if these effects are greater than that of parental loss through death or separation. Research suggests that parental death can be a risk factor for adult depression (Kendler, Sheth, Gardner, & Prescott, 2002) and can have an enduring impact on the endocrine system (Tyrka et al., 2008). An emerging evidence base is also identifying the salient influence of childhood emotional abuse on later emotional processing, even when history of physical and sexual abuse is accounted for (van Harmelen et al., 2010; van Harmelen et al., 2013). Thus, it is possible that early experiences beyond physical and sexual abuse may also influence factors that are relevant to caregiving capacity.

In addition to issues of measurement in relation to maternal abuse, there are a number of considerations in terms of measures of maternal behaviour. Although the majority of studies included in this review measured some form of maternal sensitivity, actual coding schemes varied substantially and many of these constructs included a number of different aspects of maternal behaviour (e.g., responsiveness, intrusiveness, promotion of joint attention) making comparisons difficult. It is likely that these global and varied measures of sensitivity also account for some of the inconsistent findings in this review. Of note is that some studies reviewed here included both structured and unstructured components to their observations; however, no papers considered how maternal behaviour may differ within these different situational demands. In addition to challenges associated with the varied measurement of sensitivity, it is also likely that caregiving behaviours beyond sensitivity need to be considered in studies that are measuring maternal behaviour in samples of mothers who have been abused. As was the case for one sample presented in this review, it was only FR behaviours

that were related to maternal abuse. Although this study found that it was only being unresolved with respect to the abusive experience (Jacobvitz et al., 2006; Leon et al., 2004) that was associated with FR behaviour, across most other studies it has not been sufficiently examined if abuse itself is a risk factor for disrupted caregiving (i.e., frightened/frightening and atypical maternal behaviours) or if it is only when the mother is unresolved (Bernier & Meins, 2008). At present, these maternal behaviours have primarily been explored in relation to unresolved states of mind and have not been sufficiently explored in relation to self-reported abuse or in clinical samples where abuse is likely to be high (with some exceptions such as Hobson et al. (2009)). In sum, it is possible that global measures of sensitivity measured under low stress observation conditions overlook or do not account for specific aspects of caregiving that are likely to be disrupted in mothers with an abuse history.

## Future Directions

This review raises a number of important considerations for future research. First, it asks for consideration of *what* is expected to be disrupted in abused women that may place them at risk for non-optimal caregiving. This question is important in terms of identifying what it is studies should be measuring and how to design studies that will be sensitive to these effects. In the absence of good theory and specific hypotheses, studies are likely to be less comparable and findings more difficult to interpret. Arguably the attachment literature has provided the best attempt to do this so far, by offering the hypothesis that a lack of integration of a traumatic memory into a coherent representation results in disrupted caregiving behaviour due to the infant triggering these unintegrated traumatic memories. A significant research base has demonstrated associations between unresolved states of mind with respect to loss or abuse from an attachment figure (Madigan et al., 2006; Van Ijzendoorn et al., 1999); however this model still has limitations and a lack of explanatory power (see Bernier and Meins, 2008 for a thoughtful review of these issues). Moreover, other models beyond attachment are relevant and need to be considered. Indeed, this review would suggest that theories of psychopathology and neurobiology have a great deal to offer in terms of providing more specific hypotheses about what we might expect to be disrupted in abused mothers and how that might interfere with their ability to care for their infant.

Achieving greater specificity in predictions and pathways from maternal abuse experiences to later caregiving risk can be informed by research from neuroscience and cognitive/emotional

processing (e.g., attentional biases), as these literatures offer clues as to which capacities are likely to be disrupted as a consequence of developmental abuse experiences. For example, these perspectives suggest that developmental experiences of abuse are particularly damaging in that they affect systems associated with stress reactivity and emotional processing. Individuals with abuse histories have been found to be hypersensitive to angry and fearful faces, to be more likely to make negative attributions about the self and others, to have difficulty holding information in mind in the presence of distracting emotional information and to show impaired top-down cortical regulation of emotional arousal (Cromheeke, Herpoel, & Mueller, 2014; Glashouwer & De Jong, 2010; Hart & Rubia, 2012; Johnson, Gibb, & McGeary, 2010). It follows then that abused mothers may be most likely to have difficulty in responding under conditions of stress and/or in the face of emotionally vulnerable infant cues. Of course, the importance of maternal responses to infant signals of distress has been considered within the attachment literature. Research within general parenting populations has highlighted how mothers differ in their ability to be sensitive to infant cues of distress and non-distress and under conditions of low and high stress (Leerkes, 2011; Leerkes et al., 2011; Leerkes, Blankson & O'Brien, 2009; Madigan, Moran, & Pederson, 2006; McElwain & Booth-LaForce, 2006; Smith & Pederson, 1988). Moreover, the measurement of atypical maternal behaviours has placed a particular emphasis on the relevance of infant vulnerability in eliciting disrupted caregiving behaviour (Lyons-Ruth et al., 1999). An integration of these two bodies of research strongly suggests that the direction for future research is for mothers with abuse histories to be observed interacting with their infants under varying levels of stress and for the quality of these interactions to be compared and to be related to relevant psychological variables in the mother.

Secondly, this review would suggest that there is a need to move beyond associations to models of explanation by considering potential mediating pathways between maternal abuse experiences and later caregiving behaviours. It is clear that not all mothers who were abused show caregiving difficulties but what is less clear is why some are able to be sensitive caregivers and why others are not. Attachment theory would suggest that it is the ability of the mother to be able to integrate or reflect on her early traumatic experiences that enables her to be able to perceive and respond to her infant in a non-defensive, open and accurate way. In line with this is a study included in this review (Stacks et al., 2014) which found reflective functioning to be associated with maternal sensitivity; however, no association was found between reflective functioning and self-reported abuse experiences. The authors

suggest that the lack of association between self-reported abuse and reflective functioning could be because the sample was generally of low demographic risk and discuss the possibility of maternal abuse history being mitigated by social advantages (e.g., lack of financial burden, increased social or spousal support). This notion would be consistent with other research pointing to the importance of socio-economic status for child outcomes, such as studies that have documented higher rates of disorganised infant attachment in socio-economically deprived samples, even in the absence of anomalous caregiving behaviours (Bailey, Moran, & Pederson, 2007; van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999). Measuring the ability of mothers to reflect on their past attachment and traumatic experiences and considering correlates of social economic advantage have the potential to increase understanding of which factors place women with abuse histories at greater or lesser risk of engaging in non-optimal caregiving.

As discussed in this review, additional mechanisms of transmission between maternal abuse history and later caregiving could be through mental health symptoms and/or compromised cognitive and affective processes associated with childhood abuse. A notable challenge of this approach is teasing apart the role of abuse, psychopathology (e.g., depression) and stress responsivity in the mother, given the high overlap between these three variables. The current review highlights how very few studies have measured all three of these factors in relation to caregiving within one sample. Only the study by Pereira et al. (2012) (using a subjective measure of parenting stress) and Gonzalez et al. (2012) (which used a biological measure) measured all three and suggest a role for stress as a mediating mechanism more so than depressive symptoms. This pathway would be consistent with neuroimaging and cognitive research which has reported heightened neural sensitivity to threat in those with a history of abuse, even when depression and anxiety symptoms are controlled (Dannlowski et al., 2012; Johnson et al., 2010). Future research may wish to consider if there are some processes associated with psychopathology that may be better accounted for by early life experiences, and how these processes may influence caregiving. It may be that mothers with mental health problems differ in caregiving quality depending on whether or not there is a history of adverse childhood experiences, a proposition that would be in line with other research which has described different subtypes of depression based on the presence or absence of early life stress (Heim et al., 2000; Heim, Plotsky, & Nemeroff, 2004).



Although there were no specific aims of this paper with regards to identifying potential moderators of the relationship between maternal abuse history and later caregiving, this review would suggest that there has been little exploration of potential moderators in this area (although interested readers are directed to Mileva-Steitz et al., 2012; Mileva-Steitz et al., 2013 for research that has described gene-environment interactions in relation to human caregiving). Future research may wish to consider the measurement of proximal experiences of abuse, infant characteristics (e.g., temperament, gender), genetics or other factors (e.g., quality of the marital relationship), as it may be that the experience of childhood abuse is only a risk factor in the presence of other additional risk factors. In light of findings that adults with childhood abuse histories are more likely to be victimised in adulthood (Briere & Elliott, 2003) and that domestic violence within the perinatal period has been associated with representations of the infant (Huth-Bocks et al., 2004), accounting for ongoing traumatic experiences, and how that may interact with earlier experiences of abuse, may add further explanatory power to understanding individual differences in caregiving amongst mothers who have been abused. In terms of child characteristics, it may be that infant temperament is especially pertinent to understanding caregiving in mothers who have been abused. One could hypothesise that mothers who have been abused may be particularly challenged by infants who are more difficult to soothe. Mothers who have been abused may be more likely to feel emotionally rejected by or threatened by an infant that is consistently difficult to soothe and may be inclined to make attributions that would interfere with her ability to respond sensitively. Of course, negative attributions about the infant could also be said to exist for mothers with depression and therefore it would be important that studies measure both of these factors. Interestingly, Cornish et al. (2006) found that it was chronically depressed mothers who reported being the most challenged by infants that were difficult to soothe, reporting greater parenting stress and more negative hostile attributions and feelings towards the infant, when compared to never depressed mothers. Given recurrent depression is associated with greater childhood adversity than single-episode depression, it would be of interest to examine these factors systematically and relate them to observed caregiving, considering infant temperament.

A final consideration of the current review is that all measures of abuse described here were based on maternal self-report. There are considerations in relation to the validity of retrospective self-report measures of abuse; however on the whole it is believed that

measures which are standardised and provide well operationalised behavioural definitions of abuse are the least subject to bias and on the whole false positives are believed to be rare (i.e., it is likely that under-reporting of abuse experiences is a greater issue in terms of the reliability of reporting) (Hardt & Rutter, 2004). Finally, during the process of this review it was noted that several research groups have measured both self-reported abuse and caregiving but the relationship between these variables was not reported or variables were reported separately in different publications. The extent to which this reflects a publication bias or is simply a consequence of these questions not being the primary focus of most studies is not clear.

Given that research is only just beginning to establish an understanding of potential mediating mechanisms between early maternal experiences and later caregiving behaviour, it is perhaps not surprising that findings reported in this review are inconsistent. Future research would benefit from replication using samples of similar socio-economic or clinical risk and with consistent use of measurement. For example, self-report questionnaires such as the CTQ provide an efficient way to measure maternal self-reported history of abuse and allow for comparisons across studies. With respect to measures of observed caregiving, it would be beneficial for authors to clearly outline what maternal behaviours are included in their coding schemes to help readers determine if measures of maternal sensitivity are comparable. In addition, this review would suggest that the direction for future research may be to consider what precise maternal behaviours, under what conditions (e.g., high versus low stress) and in which domains (e.g., emotional responding versus teaching contexts) women with abuse histories may be most challenged by the caregiving role, as well as consideration of what factors may mediate and moderate this association. The infancy period presents a window of opportunity to intervene and support mothers in developing a relationship with their infant who for a variety of reasons may struggle as a consequence of their own early experiences. Further understanding of the mechanisms involved in the intergenerational transmission of caregiving is critical to provide greater specificity in interventions that might be provided.

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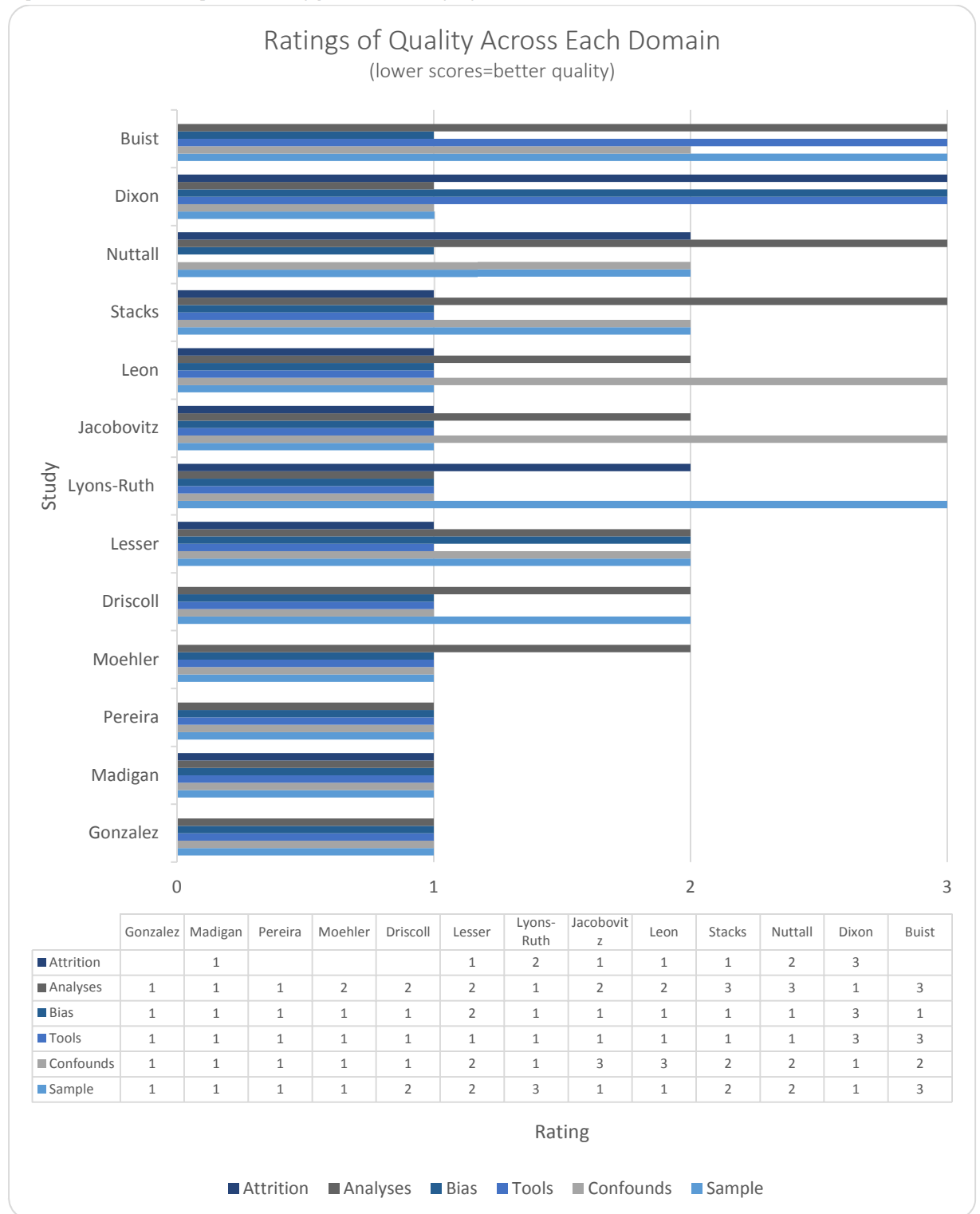
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## Appendix

### A.1 Methodological Quality by Study

Figure 3. Methodological Quality for each Study by Domain



## A.2 SYSTEMATIC REVIEW: QUALITY ASSESSMENT<sup>11</sup>

**SELECTION BIAS:** Is the cohort representative of the target population? How was the sample recruited- how will it influence the generalizability of the findings?

1. Are the individuals selected to participate in the study likely to be representative of the target population?
  - a. Yes
  - b. No
  - c. Can't tell

*Consider: randomly selected from a comprehensive list of individuals in the target population? referred from a source in a systematic manner or preselected on some variable ? self-referred?*

Rating	STRONG	MODERATE	WEAK
Sample	1	2	3

**CONFOUNDERS:** Appropriate identification and control of confounding variables in relation to outcome

1. Have the authors identified all important confounding factors? (e.g., SES, ethnicity, marital status, parity, age, education, maternal depression)?
  - a. Yes
  - b. No
  - c. Can't tell
2. Have they taken account of confounding factors in the design or analysis?
  - a. Yes, most
  - b. Some
  - c. None or few
  - d. Can't tell

Rating	STRONG	MODERATE	WEAK
Confounders	1	2	3

---

<sup>11</sup> Based on the EPHPP Quality Assessment Tool for Quantitative Studies. Modified to address measurement issues specific to observational caregiving studies

## DATA COLLECTION METHODS

*Consider: non-standardised questions or coding schemes to measure maltreatment or caregiving may not have demonstrated adequate reliability or validity*

### 3. VALIDITY

Were data collection tools valid?

- a. Yes
- b. No
- c. Can't tell

Were outcome assessors trained in the coding scheme they were using?

- a. Yes
- b. No
- c. Can't tell

### 4. RELIABILITY

Were data collection tools reliable?

- a. Yes
- b. No
- c. Can't tell

Where maltreatment was rated from narratives was this double rated?

- a. Yes
- b. No
- c. Can't tell
- d. Not applicable

Was inter-rater reliability adequate (e.g., kappa or ICC  $\geq 0.7$ )?

- a. Yes
- b. No
- c. Can't tell

Rating	STRONG	MODERATE	WEAK
Tools	1	2	3

## BLINDING

5. Were the outcome assessors blind to maltreatment status?

- a. Yes

- b. No
- c. Can't tell

Rating	STRONG	MODERATE	WEAK
<b>Blinding</b>	1	2	3

## ANALYSES

6. Is the statistical method appropriate to determine if there is an association between the two variables of interest for this review?
  - a. Yes
  - b. No
  - c. Can't tell

*Guidelines for rating: LOW-only correlation; MODERATE-associations between predictor & outcome have controlled for other variables; HIGH- controlled well for other variables and more sophisticated statistics (e.g., path analysis)*

Rating	STRONG	MODERATE	WEAK
Analyses	1	2	3

## OPTIONAL

**ATTRITION-** if longitudinal study, do they describe the number and reason for drop out

7. Were withdrawals/drop-out equal to completers on relevant variables?
  - a. Yes
  - b. No
  - c. Can't tell
  - d. Not applicable (e.g., not longitudinal study)
8. Indicate the percentage of participants that completed the study
  - a. 80-100%
  - b. 60-79%
  - c. Less than 60%
  - d. Can't tell
  - e. Not applicable

Rating	STRONG	MODERATE	WEAK
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Attrition	1	2	3
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## INTERVENTION

9. Was the study an intervention study?
  - a. Yes
  - b. No
  
10. If yes, did all participants undergo intervention prior to observation of caregiving
  - a. Yes
  - b. No, but accounted for exposure to intervention
  - c. Can't tell

Rating	STRONG	MODERATE	WEAK
Intervention	1	2	3

## GLOBAL RATING FOR THIS PAPER

Strong= no weak ratings  
 Moderate= one weak rating  
 Weak= two or more weak ratings

Rating	STRONG	MODERATE	WEAK
OVERALL	1	2	3

Empirical Study  
Maternal History of Abuse and Maternal 'mind-mindedness'  
in a Sample of Mothers with Severe Mental Illness Treated in  
a Mother-Baby Inpatient Unit

SUPERVISED BY

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## **Abstract**

The present study examined maternal self-reported history of childhood abuse and mental health status in relation to maternal mind-mindedness (MMM). A sample of mothers with severe mental illness recruited from a Mother-Baby Inpatient Unit (MBU) (N=50) and a sample of mothers with no mental health diagnosis (N=45) were observed in a brief infant-mother interaction which was later coded using the MMM scheme. Mothers were also administered a questionnaire about their own experiences in childhood (Childhood Care and Abuse Questionnaire; CECA-Q). 54% of the MBU sample reported an experience of physical and/or sexual abuse in childhood compared with 13% of the non-clinical group. Women exposed to abuse (physical, sexual or emotional) in childhood were significantly more likely (Odds Ratio 9.35) to have experienced severe mental illness in the postpartum period. Mothers in the clinical and non-clinical group did not significantly differ in MMM. In contrast to hypotheses, abused mothers were found to make more, rather than less, mind-related comments than non-abused mothers. The combination of abuse and mental health diagnosis was particularly associated with a tendency to over attribute mind-related comments to the infant. The difference between abused and non-abused mothers in terms of MMM was not significant when videos at discharge were used for the MBU mothers. Limitations and implications of the results are discussed.

## **Introduction**

Maternal sensitivity has been considered a key precursor to the development of secure infant-mother attachment relationships. This was originally highlighted by Mary Ainsworth following her naturalistic research in the 1970's where individual differences in maternal behaviour within the first three months of life were found to predict the infant's later attachment behaviour towards the mother (Ainsworth, Blehar, Waters, & Wall, 1978; Ainsworth, Bell, & Stayton, 1974). Ainsworth and colleagues (1978) discovered that infants who displayed a "secure" pattern of attachment in the context of a stressor (i.e., separation from the mother in the laboratory, known as the Strange Situation Procedure) were the infants who had previously been observed to have had their cues responded to sensitively by the mother in the home. The Strange Situation Procedure (SSP) was designed by Ainsworth and colleagues as a method of measuring infant attachment behaviour in a standardised way and since that time has been considered the most robust way to measure the quality of the infant-mother attachment relationship (Solomon & George, 2008). Infant security is measured by assessing the infant's behaviour towards the mother when the mother and infant are reunited after a brief separation. The attachment system is understood to be a goal corrected system in that it functions to provide protection in the context of stress and has a set goal of physical proximity or "felt security" (Sroufe, 1979). Thus, an infant who is deemed "secure" will, under conditions of stress or distress, seek proximity or contact with the caregiver and once this goal is achieved be able to resume the pursuit of other goals (e.g., exploration).

Despite the robust effect that Ainsworth and colleagues observed between early maternal behaviour and later infant security ( $r=.78$ ), subsequent studies have failed to replicate the same strength of association. Results from De Wolff and van IJzendoorn's (1997) meta-analysis found a moderate effect size between maternal sensitivity and infant security as measured in the SSP, and this was true even when those studies that used the original Ainsworth sensitivity scales were examined exclusively ( $r=.24$ ). Since this time attention has been placed on the need for greater precision in how maternal sensitivity is measured as well as the potential of other constructs that could better predict infant security (De Wolff & IJzendoorn, 1997; Goldberg, Grusec, & Jenkins, 1999; Meins, 1999; Slade, Grienemberger, Bernbach, Levy, & Locker, 2005).

## **The Concept of Maternal Mind-mindedness and Infant Security**

Maternal mind-mindedness (MMM) is a concept used to describe the propensity of a mother to treat her infant as a psychological agent with a mind of his/her own (Meins, 1997). A mother who takes a 'mentalistic stance' towards her infant will consider her infant's communication as meaningful and as separate from her own, thus enabling her to respond in a way that is 'attuned' to the infant. MMM was developed to measure a core and specific aspect of Ainsworth's original formulation of maternal sensitivity by focusing on the ability of the mother to accurately interpret her infant's cues and to 'take the perspective of' her infant (Meins, 2013). MMM is operationalised by the propensity of a mother to use mentalistic terms to describe her child ("offline" mentalising) or while engaging with her child during a live interaction ("online" mentalising). Mind-related comments measured during live interactions include any explicit comment about the infant's internal state, or comments that demonstrate a mother 'voicing out loud' what might be going on in her infant's mind (e.g., "Mummy, I'm bored of that toy" when the infant looks disinterested). Mind-related comments may include references to the infant's desires and preferences, cognitions, emotions or epistemic states (Meins & Fernyhough, 2010).

A noteworthy feature of "online" mind-mindedness is that comments can be classified as 'appropriate' or 'non-attuned' depending on the accuracy of the mother's attribution of her infant's internal state. Internal state comments that appear at odds with the infant's behaviour or have no relation to the infant's current activity are classified as non-attuned and reflect times when the mother inaccurately perceives, disregards or projects her own internal states towards the infant. Longitudinal research has demonstrated that mothers' mind-related comments about their infant at six months predicted secure infant-mother attachment at 12 months, and in this sample was a better predictor of infant security than a behavioural measure of maternal sensitivity (Meins, Fernyhough, Fradley, & Tuckey, 2001). Results from this study suggested that, a measure of maternal discourse about infant's internal states could potentially be a more reliable predictor of infant security than measures of maternal behaviour. This finding coincided with the increasing appreciation amongst attachment researchers that the relationship between behavioural measures of maternal sensitivity and infant security were not as robust as originally thought (De Wolff & Ijzendoorn, 1997). Moreover, subsequent research has shown that the different dimensions of MMM have unique predictive validity in relation to other attachment constructs. In particular, appropriate and non-attuned comments have not been found to be correlated, showing

independent associations with infant security and maternal behavioural sensitivity. Within non-clinical low risk samples, sensitive maternal behaviour has been uniquely associated with appropriate mental-state comments but unrelated to non-attuned mental state comments (Meins et al., 2012; Meins et al., 2003). Non-attuned comments also appear to be more sensitive in predicting organized versus disorganized mother infant attachment than appropriate mind related comments (Meins et al., 2012). These findings highlight the multi-dimensional nature of the MMM construct and the importance of capturing the *accuracy* of mothers' mind-related comments (Meins, 2013).

It is believed that children who have experienced mind-minded interactions with their caregiver will develop an understanding of their own and others' behaviour in terms of underlying thoughts, feelings and intentions. Indeed, across a number of different samples, mothers' appropriate mental state comments have been associated with children's own understanding of minds and emotions both concurrently and prospectively (Ereky-Stevens, 2008; Laranjo, Bernier, Meins, & Carlson, 2010; Lundy, 2013; Meins et al., 2002; Ruffman, Slade, & Crowe, 2002). The capacity to understand oneself and others in terms of mental states lies at the crux of optimal socio-cognitive development and disruptions in this capacity may increase vulnerability for psychopathology (Sharp & Fonagy, 2008).

### **Individual Differences in Maternal Mind-mindedness**

Given the demonstrated importance of the MMM construct for developmental outcomes in the child, understanding what explains individual differences in one's ability to be mind-minded is of theoretical and empirical importance. Theoretically, the ability of a caregiver to attribute internal states to her infant is presumed to be underpinned by the way in which she represents or thinks about her infant-namely, that she sees the infant as a person with a separate mind. Research that has explored this idea has considered how a mother either represents her own attachment experiences or how she is able to reflect on (i.e., mentalise about) her attachment experiences and the parenting role, in relation to her capacity to be mind-minded about her infant. Demers and colleagues (2010) found, within their mixed adolescent and adult sample, that the caregiver's attachment representation (specifically the coherency of the caregiver's narrative during the Adult Attachment Interview; AAI) was associated with more positive mind-related comments. Similarly, but within a sample of foster children and their mothers, Bernier and Dozier (2003) reported that an autonomous (or

secure) state of mind with respect to attachment was associated with more mentalistic descriptions of the infant and found that these descriptions mediated maternal state of mind and infant-mother attachment. Finally, Rosenblum and colleagues (2008) reported that the extent to which a parent reflects on the parenting role and their infant during an interview (the Working Model of the Child Interview) was associated with greater overall mind-related comments during interactions with their infant. In particular, this study showed that how mothers think about their infant and the parenting role accounts for more variance than depressive symptoms or maternal education in the extent to which mothers make 'online' comments about their infant's internal states.

It could be argued that the above described research examining maternal representations in relation to MMM reflect more 'trait-like' characteristics of the mother. However, the extent to which MMM is influenced by state or contextual factors should also be considered.

Theoretically, one might expect there to be both trait and state aspects to MMM as has been discussed in relation to other measures of mentalisation (Fonagy & Luyten, 2009). At least within infant samples, research has found MMM to be unrelated to both social background, including socio-economic status and perceived social support, and parent-reported infant temperament (Demers et al., 2010; Meins, Fernyhough, Arnott, Turner, & Leekam, 2011; Rosenblum et al., 2008). In relation to maternal psychological factors and MMM, studies have observed no or only a modest association between mothers' self-reported depressive symptoms and MMM, although a negative relationship between perceived parenting stress and MMM has been reported (Demers et al., 2010; McMahon & Meins, 2012; Rosenblum et al., 2008).

Thus, based on the available evidence, it appears that how a mother represents both her own past attachment experiences and her new relationship with the infant, is associated with her propensity to engage in mind-related discourse during interactions with her infant. The current body of research would also support the notion that mental health symptoms, characteristics of the infant or social circumstances are not sufficient to account for individual differences in MMM. However, it should be noted that the majority of these studies have involved relatively low-risk samples, and the extent to which these associations are true of higher risk samples is less clear.

There is only one study that has examined MMM in the infancy period within a higher risk sample. Pawlby and colleagues (2010) report on MMM in a sample of mothers with severe

mental illness who were admitted to a mother-baby inpatient unit (MBU). This study found no significant difference between the MBU and a non-clinical group of mothers in mind-mindedness during a brief interaction with their infant. Although it is possible that this finding supports the idea that MMM is not influenced by mental health status (but instead that the construct constitutes an underlying trait like propensity to comment on internal states), it is also possible that this null finding may be because the MMM coding scheme was developed for use amongst non-clinical populations and therefore is not sufficiently sensitive to distinguish qualitative differences observed in mothers with severe mental illness. The authors describe a number of comments that they observed which could not be accounted for by the MMM scheme, including mind related comments which had a negative emotional tone or requests for the infant to perform a behaviour that was developmentally inappropriate (e.g., asking a 6-month old infant to say “Teddy”), suggesting that some aspects of how mothers were thinking about their infant could not be accounted for by the coding scheme. Since this time, the MMM coding scheme has been updated to encourage researchers to take these comments into account (Meins & Fernyhough, 2010).

The study by Pawlby and colleagues (2010) was the impetus for the present study which measured mind-mindedness in a separate sample of mothers with severe mental illness. The aims of this study are twofold. First, to test if the results of Pawlby and colleagues will be replicated and clinical and non-clinical mothers will again not differ in their propensity to make mind-related comments. A further question is if there is any benefit in including an additional dimension of MMM that would take into account comments that were observed in the study by Pawlby and colleagues. A secondary aim of the present study is to explore whether a maternal factor, beyond mental health status, could account for individual differences in maternal mind-mindedness. In particular the present study is interested in ascertaining if early adverse experiences in a mother’s own childhood may influence her propensity to be curious about her infant’s internal states.

## **Early Childhood Experiences and Mentalisation**

Early childhood experiences are believed to influence the ability of individuals to consider their own and others’ behaviour in terms of underlying psychological states. Fonagy and colleagues discuss how the ability to mentalise is a “developmental achievement”, in that it is within a secure attachment relationship that a child develops a sense of themselves as an



independent agent motivated by their own feelings, beliefs and intentions (Fonagy & Luyten, 2009). Children who develop a capacity for mentalisation are believed to have had their internal states correctly identified, validated and modulated by the caregiver, thereby fostering an ability to regulate their own behaviour and emotions. Thus, it is disruptions in early attachment relationships that are believed to undermine the development of mentalisation. Fonagy and colleagues describe how experiences of maltreatment in childhood may derail the development of mentalisation via an absence of mutually attuned and reflective communication about internal states between caregiver and child in the context of familial abuse, a reluctance for children who have been abused to conceive of mental states in others (due to the experience of malevolent intentions from others), and/or heightened stress reactivity in those that have been abused that undermines functioning of prefrontal areas of the brain that support mentalising under conditions of emotional arousal (Fonagy, Gergely, & Target, 2007; Fonagy & Luyten, 2009).

Although the impact of childhood abuse experiences in relation to mentalisation has been discussed a great deal in the literature, there is comparatively little empirical research on this topic. This is particularly true of the relationship between childhood abuse experiences and mentalising in parenting populations. Most research that has examined the impact of childhood experiences on mentalising capacity in pregnant or parenting populations has been in relation to “reflective functioning”, which specifically assesses the degree to which an adult, during a clinical interview, reflects upon their relationships with attachment figures in childhood in mentalistic terms (Fonagy & Target, 1997). In a Finnish sample of substance abusing women, low reflective functioning was observed across the sample as a whole and those with childhood histories of abuse were found to make less change in reflective functioning over the course of residential treatment (Pajulo, Pyykkönen, Kalland, Sinkkonen, & Helenius, 2012). In a recent study of a sample of pregnant women with histories of childhood abuse, a reduced ability to mentalise about abusive events specifically (rather than a general lack of reflectiveness) was noted, and this was associated with lower investment in the pregnancy and reduced positive feelings about the baby and motherhood (Ensink, Berthelot, Bernazzani, Normandin, & Fonagy, 2014).

In sum, there is a relative lack of research that has directly examined abuse histories in relation to parental mentalising capacity, highlighting the need for further research to examine the relationship between these two constructs. Given that childhood maltreatment is common in people with a psychiatric disorder (e.g., Nanni, Uher, & Danese, 2012; Read, Os,

Morrison, & Ross, 2005), it follows that this should be explored in relation to the ability of mothers with mental health problems to mentalise about their infants. We are aware of no studies that have examined childhood abuse amongst mothers with a range of severe mental illness, nor any research that has examined maternal history of abuse in relation to MMM.

### **Aims of the current study**

The present study will describe rates of self-reported childhood abuse in a sample of women who were admitted to a MBU, as well as amongst a sample of women from the same local area who have no mental health disorder. In addition, this study will examine self-reported abuse history in relation to a mother's tendency to comment on the internal states of her infant during a brief free play interaction. It is hypothesized that women from the MBU will have experienced significantly more abuse than mothers with no mental health disorder. In line with findings from Pawlby and colleagues (2010), it is hypothesized that there will be no difference in appropriate or non-attuned mind-related comments between the clinical and comparison group. The question of whether or not the addition of new MMM codes will allow for differences between the clinical and non-clinical sample to be detected will also be examined. Finally, it is hypothesized that mothers with a history of abuse, regardless of mental health status, will be less likely to make appropriate mind-related comments and more likely to make non-attuned mind-related comments during interactions with their infants.

In addition to these three main hypotheses, the extent to which maternal abuse history may be related to psychiatric symptoms within the MBU sample will be examined. It is hypothesized that abuse history will be a better predictor of MMM than psychiatric symptoms.

### **Method**

#### **Participants**

A total of 95 infant-mother dyads were included in the present study. Fifty mothers represented a clinical sample of mothers and their infants. The remaining 45 mother-infant dyads represented a healthy, community of sample of mothers from the same metropolitan area. Power analyses indicated that in order for the study to have 90% power, with two-tailed

0.05 significance level, a total of 34 participants would be required to detect a medium effect size between maternal abuse history and MMM<sup>12</sup>.

## Clinical Group

Mothers from the clinical group were in-patients on a MBU. The MBU is a 13-bedded inpatient ward for mothers who experience an episode of severe mental illness during pregnancy or within the first year postpartum. It is a unique psychiatric ward in that women who are acutely unwell can be admitted with their infant to prevent separation and foster the infant-mother relationship. Mothers receive a combination of treatments during their stay at the unit including nursing care, psychopharmacological treatment, psychological therapy and sessions with a developmental psychologist. The length of time a mother stays at the unit varies depending on the nature of her illness but in this sample, length of stay ranged from one to 29 weeks. All mothers in the present study were supported in developing a relationship with their infant by watching back a videotaped play session alongside a developmental psychologist who provides individual feedback about the interaction. Mothers are discharged into the care of a community health team when their mental health is stable and they are well enough to take care of the infant with any necessary support.

Mothers in the present study represent women who were admitted over a two year period between January 2013 and December 2014. One hundred and eighteen mothers were admitted to the ward during this time. Sixty-six percent (N=78) of those admitted during this time completed a video-recorded interaction with their baby. Those mothers who did not complete a video did not differ based on diagnostic group ( $\chi^2(4) = 3.32, p = .51$ ) but on average had shorter stays on the ward (M=37 days versus M=42 days,  $p < .001$ ). Of those who did complete a video, 65 also had data about their early childhood experiences. Of these, 12 were excluded because they were non-English speakers and 3 were excluded because they were not unwell during their stay (admitted prophylactically). This resulted in a total of 50 mother-infant dyads who were eligible for the present study. Of these, 43 had completed videos at both admission and discharge.

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<sup>12</sup> This was based on previous research which examined childhood trauma in relation to a different measure of parental mentalising (Reflective Functioning) amongst a sample of substance-abusing mothers (Pajulo et al., 2012).

Psychiatric diagnoses were obtained from the consultant perinatal psychiatrist of the MBU in line with ICD-10 (WHO, 1992) diagnostic criteria. Mothers were then assigned to one of four diagnostic groups based on their primary symptom presentation 1) schizophrenia, 2) depressive disorder with or without psychosis, 3) mania with or without psychosis and 4) anxiety (obsessive-compulsive disorder or post-traumatic stress). These diagnostic groupings are consistent with those used in other MBU studies (Kenny, Conroy, Pariente, Seneviratne, & Pawlby, 2013; Pawlby et al., 2010). The current sample included 2 in the schizophrenia category, 32 in the depression category, 8 in the mania category and 8 in the anxiety category.

### **Comparison Group**

The comparison group represented a sample of psychiatrically healthy women who were part of a longitudinal study investigating the effect of maternal stress on infant developmental outcomes (Psychiatry Research and Motherhood “PRAM” study; REC No: 07/Q0703/48). Women were recruited via antenatal ultrasound clinics at a large metropolitan hospital and were visited in pregnancy and following birth. In pregnancy, informed consent, socio-demographic data and data about early childhood experiences were obtained. A video-recorded home observation was completed at 8-weeks postpartum. All mothers were assessed using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I) (First, Spitzer, Gibbon, & Williams, 2012) and did not meet diagnostic criteria for any Axis I disorder, nor did they have a past history of mental illness.

### **Procedure**

MBU mothers were invited to participate in two 3-minute interactions with their baby during their in-patient stay. These interactions would include one face-face interaction (infant seated in a chair and mother facing them) and one free play interaction. Both videos were video-recorded and mothers were instructed to play with their infants as they normally would. Where possible, mothers would make videos near admission (within the first couple weeks of their stay) and again at discharge. During their stay, mothers were also invited to complete a questionnaire about their early childhood experiences (Childhood Experiences of Care and Abuse Questionnaire; CECA-Q Bifulco, Bernazzani, Moran, & Jacobs, 2005). Given the emotionally sensitive nature of the CECA-Q questions, the questionnaire was administered in

the format of a semi-structured interview by trained ward staff. Administration of the interview was completed when the mother's mental state had settled but not too close to discharge. Women were debriefed following the interview and support provided by staff if necessary. A detailed protocol of administration of the CECA-Q is included in the Appendix. All mothers gave informed consent and gave permission for psychiatric and demographic data to be obtained via hospital records. It was made clear to all mothers that not participating in the research would not affect their clinical care. (REC No: 08/H0807/14).

Observation of mother-infant interaction in the comparison group was conducted at home when the infant was 8 weeks old. These interactions were unstructured and the mother was asked to interact with her infant as she normally would. An assessment of mental health, demographic information and questionnaire data was obtained during a research visit that was conducted antenatally.

All video-recorded interactions were transcribed verbatim and coded for mind-mindedness (see below). For the MBU sample, only codes from the freeplay interaction were included in the present study to be as similar as possible to the interactions in the comparison sample. The primary rater (KV) was trained in the MMM scheme by an established coder (RS) who works closely with Elizabeth Meins, the author of the scheme. Codes from the first 15 videos made by the primary rater were checked with the established coder before coding was conducted independently. An additional and random 20% of each sample was double coded for inter-rater reliability. Both raters were unaware of women's history of childhood abuse. Inter-class correlations were as follows: attuned mind-related comments .92, non-attuned mind-related comments .59, total mind-related comments .98. For the categorical clinical dimension, inter-rater agreement was  $K = .70$ ,  $p < .001$ .

## **Measures**

### **Mind-mindedness**

Each transcript was coded for MMM in conjunction with the videotape using the second version of Meins & Fernyhough's mind-mindedness manual (Meins & Fernyhough, 2010). Coding involves first identifying internal state comments made by the mother. Internal state comments refer to comments the mother makes on what the infant may be thinking,

experiencing or feeling, or when the mother speaks 'on the infant's behalf' thus demonstrating an appreciation of the infant having their own thoughts, feelings and preferences. Maternal comments that refer to the infant's physical qualities, perception or behaviour are not considered mind-related. Each internal state comment was coded as appropriate or non-attuned based on the observer's assessment of the accuracy of the mother's interpretation of the infant's internal state. Comments were coded as non-attuned when the observer did not agree with the mother's interpretation, if the comment had no relation to the infant's current activity, the mother attributed a preference to the infant that did not match the infant activity (e.g., asking if they want to play with something when clearly interested in another toy) or the referent of the comment was not clear. Additional codes which Meins & Fernyhough operationalised for use in clinical samples were also identified across all transcripts. These included 1) requesting the infant to perform a behaviour too sophisticated for his/her age ("requests"), 2) talking to the infant in a developmentally inappropriate way ("adult comments"), and 3) mind-related comment said in a negative tone ("tone"). Clinical codes were summed (requests + adult + tone) and are referred to as the 'clinical dimension'. Frequency counts of each aspect of MMM were transformed to a proportion score by dividing the frequency by the total number of maternal comments.

### **Psychiatric Symptoms**

The severity of symptomatology for MBU mothers was measured using the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962). The BPRS is a clinician rated measure comprised of 18 items which are rated on a 7 point scale (1, not present; 2, very mild; 3, mild; 4, moderate; 5, moderately severe; 6, severe; 7, extremely severe), allowing for a range of possible scores from 18 to 126. Items include somatic concern, anxiety, emotional withdrawal, conceptual disorganisation, guilt feelings, tension, mannerisms and posturing, grandiosity, depressive mood, hostility, suspiciousness, hallucinatory behaviour, motor retardation, uncooperativeness, unusual thought content, blunted affect, excitement and disorientation. The BPRS is a commonly used psychiatric measure within acute inpatient settings (Varner, Chen, Swann, & Moeller, 2000). In the present study a primary clinician (Consultant Psychiatrist) who followed the mother's clinical progress during the inpatient stay made both admission and discharge ratings. The tool is designed to represent patient status considering all of the information available to the treating clinician.

## Childhood Abuse Experiences

Childhood abuse experiences were measured using the Childhood Experience of Care and Abuse Questionnaire (CECA-Q; Bifulco et al., 2005). The CECA-Q is a self-report measure that asks participants to retrospectively rate a number of childhood experiences from birth to age 16. Experiences include living circumstances (e.g., number of family arrangements, any experiences of institutional care), loss of parent through separation or death, emotional abuse, physical abuse and sexual abuse. The CECA-Q has shown good construct validity, demonstrating concordance with the more comprehensive CECA interview and the Parental Bonding Instrument. The CECA-Q scales have also been associated with recurrent depression (Bifulco et al., 2005). The current study focused on experiences of emotional abuse, physical abuse and sexual abuse as defined by this measure.

### *Emotional Abuse*

Items that measure emotional abuse are made up of sixteen items which participants rate on a five point Likert scale (1) yes definitely, to (5) not at all. Items from the emotional abuse scale are divided into two clusters: antipathy and emotional neglect. Each scale is made up of eight items (e.g., antipathy: “She was very difficult to please”, “She made me feel unwanted”; neglect: “She tried to make me feel better when I was upset”, “She cared for me when I was ill”). Participants were asked to complete emotional abuse questions for each of their primary caregivers (mother and father). Items were summed (with some scores reversed where appropriate) and scores ranged from 8 to 40. Scores greater than 25 for antipathy and greater than 22 (maternal) or 24 (paternal) for neglect were rated as one (1= emotional abuse) and scores equal to or below these cut-off points were rated 0 (no emotional abuse). These cut-offs are based on those recommended by Bifulco and colleagues (2005) for having good reliability with the CECA interview. This resulted in both a dichotomous and continuous score for emotional abuse.

### *Physical and Sexual Abuse*

Physical abuse is assessed by the question, “When you were a child or teenager were you ever hit repeatedly with an implement, or punched, kicked or burnt by someone in the household?” If the participant answered yes, then a number of follow up questions were completed including the age when the abuse occurred, how often the abuse occurred and if they were injured as a result of the abuse. In the present study, the presence of physical abuse was dichotomised based on whether the participant had experienced any degree of physical abuse (0=no physical abuse, 1= physical abuse). Sexual abuse was assessed through three prompts inquiring about unwanted sexual experiences. For those who endorsed an unwanted sexual experience(s), follow up questions were completed (such as age when abuse occurred, if the perpetrator was a family member, how frequently the abuse occurred and the degree of sexual contact that was experienced). Any report of unwanted sexual abuse was categorised as 1 (sexual abuse) and 0 indicated no sexual abuse. In the present study the presence of either physical or sexual abuse was used to classify participants as having a history of abuse or no history of abuse.

## **Results**

### **Participant Characteristics**

Table 1 outlines the socio-demographic factors of participants in both the clinical and comparison group. There were no significant differences between groups in relation to maternal age, ethnicity or marital status. Women in the clinical group were less educated and more likely to have more than one child than women in the comparison group. Within the clinical group, diagnostic category was not associated with any of the socio-demographic variables. Infant age did significantly differ between groups. In the comparison group, all infant-mother observations took place when the infant was 8 weeks old, whereas infants ranged from 3 to 67 weeks ( $M= 26.39$ ,  $SD=16.67$ ) in the clinical sample.

*Table 1. Participant Characteristics*



	MBU (n=50)	Comparison (n= 45)
Maternal age (years)		
Mean (SD)	31.49 (6.14)	32.04 (4.51)
Range	16-40	22-40
Ethnicity (% Caucasian)	68.6	77.8
Marital status (% single)	27.5	13.3
Parity (% primiparous)*	52.9	91.1
Level of Education (% greater than secondary)*	64.7	93.3
Infant age (weeks)		
Mean (SD)	26.22 (16.55)	8.0 <sup>a</sup>
Range	3-67	0
Infant Gender (% male)	59	51
Length of Stay (weeks)		
Mean (SD)	11.38	-
Range	1-29	-

\*Fisher's Exact Test  $p < .001$

<sup>a</sup> All observations were completed at infant age 8 weeks for the comparison dyads

## Overview of Analyses

Prior to carrying out inferential statistics, all independent and dependent variables were examined in relation to key demographic variables. To test the hypothesis that MBU mothers would be more likely to have experienced abuse than the psychiatrically well comparison group, chi square and t-tests were conducted with the categorical abuse and continuous abuse variables respectively. Analysis of co-variance (ANCOVA) was conducted for all hypotheses involving MMM to allow for infant and maternal age to be controlled.

## History of Abuse and Mental Health Status

Table 2 outlines the proportion of the sample with a history of abuse by group. All abuse variables were highly inter-correlated. The presence of physical abuse in childhood was associated with the presence of sexual and emotional abuse (Fisher's exact  $p < .001$  and  $p = .001$ , respectively). Sexual abuse was also associated with emotional abuse, Fisher's exact,  $p = .025$ . Maternal and paternal emotional abuse were highly correlated (neglect:  $r(89) = .83$ ,  $p < .001$ ), antipathy:  $r(88) = .71$ ,  $p < .001$ ).

A history of childhood (physical, sexual or emotional) abuse was significantly more common in MBU than comparison mothers (Fisher's exact,  $p < .001$ , OR 9.35, CI 3.56-24.51). A history of all forms of childhood abuse was significantly more common in MBU mothers: physical abuse (Fisher's exact  $p < .001$ , OR 28.39, CI 3.62- 222.79), sexual abuse (Fisher's exact  $p = .008$ , OR 4.26 CI 1.43-12.70) and emotional abuse from a parent (Fisher's exact  $p < .001$ , OR 9.83, CI 3.49-27.67).

T-tests examining differences between the clinical and comparison group in terms of the continuous scores of emotional abuse were also highly significant (maternal neglect  $t(67) = -5.67$ ,  $p < .001$ , paternal neglect  $t(80) = -5.86$ ,  $p < .001$ , maternal antipathy  $t(83) = -5.00$ ,  $p < .001$  and paternal antipathy  $t(65) = -6.50$ ,  $p < .001$ ), with the MBU mothers reporting greater abuse than comparison mothers.

*Table 2. Proportion of Abuse by Group*

	MBU (N=50) N (%)	Comparison (N=45) N (%)	Total (N=95) N (%)
Physical Abuse	20 (40)	1 (2)	21 (22)
Sexual Abuse	18 (36)	5 (11)	23 (24)
Overall Emotional Abuse	32 (64)	6 (13)	38 (40)
Any Abuse	39 (78)	11 (24)	50 (53)
	Mean (SD)	Mean (SD)	Mean (SD)
Maternal Neglect	21.70 (11.89)	11.27 (4.79)	17.00 (10.70)
Paternal Neglect	24.20 (11.17)	13.28 (6.28)	19.34 (10.76)
Maternal Antipathy	23.98 (10.69)	14.63 (6.90)	19.72 (10.25)
Paternal Antipathy	24.36 (12.15)	12.25 (4.56)	18.98 (11.27)

Given that the abuse variables were highly correlated, a composite variable of physical and sexual abuse was used for all subsequent analyses.

### **Maternal Mind-mindedness**

The distribution of MMM variables was positively skewed and thus non-parametric correlations were conducted. For other inferential statistics, parametric ANCOVAs were selected for analyses but were bootstrapped for 1000 samples using the bias corrected and

accelerated correction<sup>13</sup>. Due to the relatively low frequency of codes in the clinical dimension of MMM, a binary variable (presence or absence) was created and categorical tests were used.

MMM was not associated with infant gender, ethnicity or maternal education. Maternal age was associated with mind-related comments, with older mothers being more likely to make appropriate mind-related comments ( $r_s(95)=.22, p=.03$ ). Infant age was not significantly associated with appropriate  $r_s(95)=.15, p=.14$ , or non-attuned  $r_s(95)=.02, p=.84$ , mind-related comments.

Correlations indicate that appropriate mind-related comments were not significantly related to non-attuned mind-related comments  $r_s(95)=-.08, p=.46$ . In terms of the clinical dimension of MMM, those mothers who made clinical comments were less likely ( $M=2.61, M=6.41$ ) to make appropriate comments ( $t(93)=3.2, p=.01$ ) and more likely to make non-attuned comments ( $M=7.19, M=4.65$ ), though this did not reach significance when heterogeneity of variance was corrected ( $t(23)=-1.80, p=.09$ ).

The following section describes analyses that examine MMM first between group (MBU versus comparison) and then in relation to abuse history (abused and non-abused). All analyses were first conducted using the admission videos for the MBU group and then repeated using the discharge videos.

## Maternal Mind-mindedness and Mental Health Status

MBU mothers did not differ from comparison mothers in the proportion of appropriate comments,  $F(1, 91)= 2.21, p=.13, \eta^2= .02$ , but there was a main effect of maternal age  $F(1, 91)=4.81, p=.03, \eta^2= .05$ . MBU mothers did not differ from comparison mothers with respect to non-attuned comments  $F(1,91)=3.04, p=.13, \eta^2= .03$ . When mind-related comments were combined, there was a trend for MBU mothers to make more overall mind-related comments than comparison mothers,  $F(1, 91)=5.66, p=.06, \eta^2= .06$ . The addition the 'clinical dimension' of MMM did not improve sensitivity of the scheme to differentiate between groups, with chi

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<sup>13</sup> Bootstrapping is a computer intensive resampling method which makes inferences about population parameters computed from the sample which does not assume that the data follow a specific distribution, such as normal distribution for continuous data (Howell, 2012).

square analyses showing that MBU mothers were no more likely to make clinical comments than comparison mothers (Fisher's exact,  $p=.46$ ).

MBU mothers did differ from comparison mothers in the overall amount of speech used during interactions with their infants, with MBU mothers making less comments overall than comparison mothers but this effect was not significant once infant and maternal age were controlled,  $F(1, 91)=3.26$ ,  $p=.06$ ,  $\eta^2=.04$ . Results from the ANCOVA showed a main effect of maternal age on total number of comments  $F(1, 91)=5.35$ ,  $p=.04$ ,  $\eta^2=.06$ . Table 3 outlines descriptive statistics of MMM scores for each group. Table 8 in the Appendix (A.1) displays the range of MMM scores by group.

When the above analyses were repeated using discharge videos for the MBU sample, there was again no difference between groups in relation to appropriate  $F(1, 84)=2.03$ ,  $p=.24$ ,  $\eta^2=.02$  or non-attuned mind-related comments,  $F(1, 84)=.76$ ,  $p=.35$ ,  $\eta^2=.01$ . There was no effect of group for overall mind-related comments  $F(1, 84)=3.17$ ,  $p=.09$ ,  $\eta^2=.04$ . As was the case when admission videos were used, MBU mothers were not more likely to make clinical comments than comparison mothers (Fisher's exact test,  $p=.61$ ). There was no difference between groups for the total frequency of comments made at discharge  $F(1, 84)=2.22$ ,  $p=.29$ ,  $\eta^2=.01$ .

*Table 3. Means and Standard Deviations of MMM by Mental Health Status*

	ADMISSION		DISCHARGE	
	MBU Mean (SD)	Comparison Mean (SD)	MBU Mean (SD)	Comparison Mean (SD)
Appropriate comments (proportion)	6.63 (6.93)	4.47 (4.21)	6.45 (7.87)	4.47 (4.21)
Non-attuned comments (proportion)	3.27 (5.60)	2.43 (5.16)	3.36 (4.48)	2.43 (5.16)
Overall MR comments (proportion)	9.90 (8.93)	6.90 (5.71) *	9.81 (8.73)	6.90 (5.71)
Total frequency of comments	46.46 (16.89)	53.71 (17.16)	49.95 (18.61)	53.71 (17.16)
	%	%	%	%
Proportion with clinical dimension of MMM	18	24	19	24

## Maternal Mind-mindedness and History of Abuse

Mothers with history of physical or sexual abuse in childhood did not differ from mothers without a history of abuse in terms of appropriate mind-related comments at admission,  $F(1, 90)=3.14, p=.11, \eta^2=.03$ , but there was a main effect of maternal age  $F(1, 90)=4.91, p=.03, \eta^2=.03$ . There was no difference in non-attuned comments between abused and non-abused mothers,  $F(1, 90)=2.36, p=.19, \eta^2=.03$ . There was a significant difference between groups for overall mind-related comments with abused mothers making more than comparison mothers,  $F(1, 90)=5.98, p=.05, \eta^2=.06$ . There was no association between abuse history and the likelihood that mothers would make clinical comments, Fisher's Exact  $p=.43$ . Mothers who had been abused did differ from non-abused mothers in the overall amount of speech used during interactions with their infants, making less comments overall than non-abused mothers,  $F(1, 90)=4.87, p=.02, \eta^2=.05$ .

Table 4. MMM by Abuse Status for Combined Sample

	ADMISSION		DISCHARGE	
	Abused	Non-abused	Abused	Non-abused
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Appropriate comments (proportion)	7.13 (7.28)	4.77 (4.87)	6.28 (8.04)	5.02 (5.40)
Non-attuned comments (proportion)	3.86 (6.41)	2.38 (4.75)	3.58 (4.93)	2.60 (4.83)
Overall MR comments (proportion)	10.99 (9.53)	7.16 (6.23)*	9.86 (8.98)	7.63 (6.63)
Total frequency of comments	43.94 (13.87)	52.69 (18.11)**	48.64 (15.35)	53.00 (18.80)

MR=mind-related; \*  $p=.05$ ; \*\*  $p=.02$

When the above analyses were repeated using discharge videos for the MBU sample, the same findings emerged for both appropriate  $F(1, 83)=.63, p=.47, \eta^2=.01$  and non-attuned mind-related comments,  $F(1, 83)=.65, p=.41, \eta^2=.01$ . However, there was no longer a significant difference between the abused and non-abused groups in terms of total mind-related  $F(1, 83)=1.42, p=.29, \eta^2=.01$  or overall number of comments,  $F(1, 83)=1.09, p=.31, \eta^2=.01$ , made at discharge. Mothers with a history of abuse were found to be less likely to make clinical comments than mothers without an abuse history, Fisher's exact  $p=.03^{14}$ . Table 4 displays descriptive statistics for MMM by abuse.

MMM was also examined in relation to continuous measures of emotional abuse. There was no significant effect of antipathy or neglect from a parent in relation to appropriate mind-related comments (neglect:  $r_s(91)=.001, p=.99$ , antipathy  $r_s(91)=-.05, p=.65$ ) or non-attuned comments, (neglect:  $r_s(910)=.16, p=.14$ , antipathy:  $r_s(91)=.19, p=.07$ ).

## Post-Hoc Analyses

The following section presents differences in MMM presented in terms of four-way categories of abuse and group: 1) well and no abuse history, 2) well and a history of abuse, 3) unwell and no abuse history and 4) unwell and an abuse history.

### *Maternal Mind-mindedness in Relation to Both Abuse and Mental Health Status*

Abused mothers in both the MBU and comparison group displayed greater appropriate and non-attuned comments but no significant differences between the four groups emerged on these two aspects of MMM: appropriate ( $F(3, 88)=1.39, p=.25, \eta^2=.05$ ) and non-attuned  $F(3, 88)=1.47, p=.23, \eta^2=.05$ . There was a significant difference between groups in terms of overall MR comments,  $F(3, 88)=3.13, p=.03, \eta^2=.10$ . Post-hoc tests using the Bonferroni procedure, revealed that the non-abused comparison mothers ( $M=6.00$ , 95% bootstrapped CI: 3.73-8.30) made significantly less MR comments overall than the abused MBU mothers ( $M=12.51$ , 95% bootstrapped CI: 8.61-17.17),  $t(88)=-2.95, p=.04, \eta^2=.09$ . There was no difference between groups in the likelihood of mothers to make clinical comments (Fisher's

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<sup>14</sup> This result should be considered cautiously as one cell had very few observations ( $N=2$ ).

exact test,  $p=.47$ ). Finally, results indicate no difference between four-way group and overall frequency of comments,  $F(3, 88)=2.15$ ,  $p=.10$ ,  $\eta^2=.07$ .

When discharge videos were used, the same results emerged, for appropriate  $F(1, 81)=.72$ ,  $p=.54$ ,  $\eta^2=.03$ , non-attuned,  $F(1, 81)=.41$ ,  $p=.75$ ,  $\eta^2=.02$  and total frequency of comments  $F(1, 81)=.53$ ,  $p=.66$ ,  $\eta^2=.02$ . However, there was no longer a difference between the four groups for overall mind-related comments  $F(3, 81)=1.16$ ,  $p=.33$ ,  $\eta^2=.04$ .

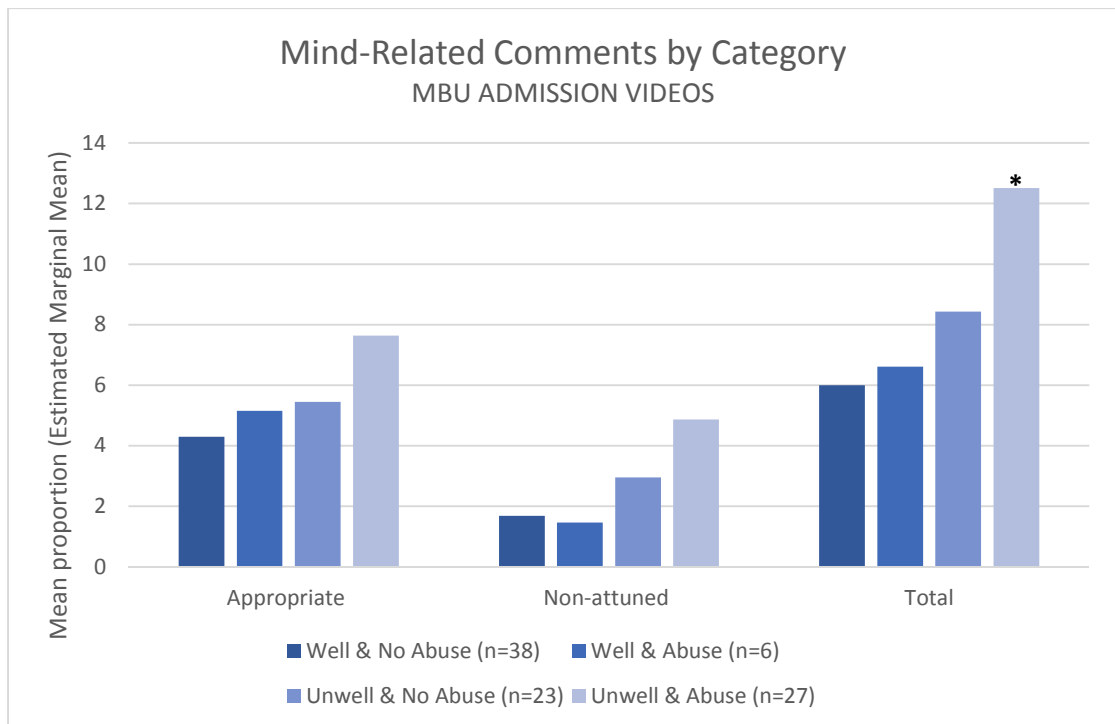
Figures 1 and 2 display MMM scores categorising women on the basis of abuse history and mental health status. Descriptive statistics are presented in Table 5 outlining four-way category using MBU admission videos. Table 9 in the Appendix (A.2) presents MMM scores using the MBU discharge videos.

*Table 5. Descriptive Statistics of Mind-mindedness by Four Way Category*

	Well & No Abuse (N=38)	Well & Abuse (N=6)	Unwell & No abuse (N=23)	Unwell & Abuse (N=27)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Appropriate comments (proportion)	4.31 (4.39)	5.17 (3.44)	5.55 (5.60)	7.56 (17.87)
Non-attuned comments (proportion)	2.52 (5.55)	2.28 (2.22)	2.16 (3.10)	4.21 (7.00)
Total MR comments (proportion)*	6.80 (6.12)	7.46 (3.05)	7.71 (6.52)	11.77 (10.32)
Overall comments (frequency)	53.42 (17.62)	51.83 (13.75)	51.48 (19.25)	42.19 (13.52)
	%	%	%	%
Proportion with clinical comments	12	0	4	5

*MR=mind-related; \*post-hoc tests revealed a significant difference between the well & no abuse group when compared to the unwell & abuse group,  $p=.04$*

Figure 1. Mind-mindedness by Four Way Category using MBU Admission Videos<sup>15</sup>

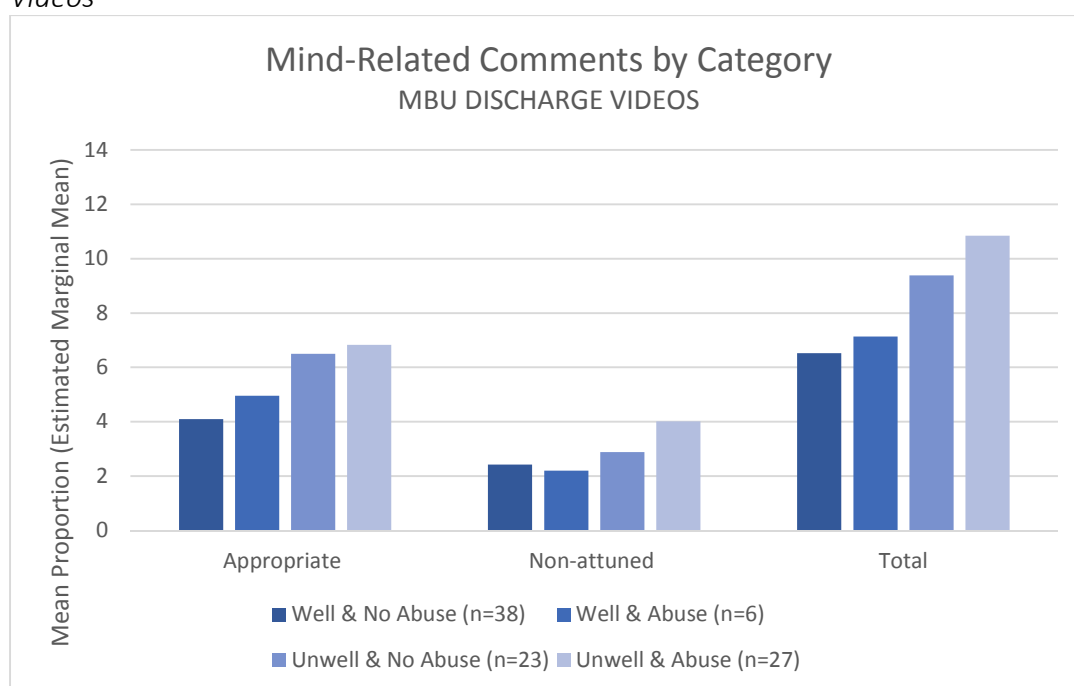


\*post-hoc tests indicated abused MBU mothers to score significantly higher than non-abused comparison mothers ( $p=.04$ )

<sup>15</sup> Scores represent Estimated Marginal Means (mean proportion score adjusted for co-variates of infant age and maternal age)



Figure 2. Mind-mindedness by Four Way Category using MBU Discharge Videos<sup>16</sup>



## MBU Sub-Sample Analyses

### Preliminary Analyses

Demographic variables were examined in relation to all independent and dependent variables. Neither abuse nor psychiatric (BPRS) variables were related to ethnicity or maternal education. Scores of psychiatric symptom severity (BPRS) were positively skewed and therefore non-parametric correlations were conducted. Like previous analyses, ANCOVA analyses were bootstrapped for 1000 samples.

### Diagnostic Status in Relation to History of Abuse and Severity of Psychiatric Symptoms

BPRS scores did not differ by diagnostic group (schizophrenia, depression, mania or anxiety) at admission  $\chi^2(3)=3.44$ ,  $p=.33$ , or discharge  $\chi^2(3)=6.61$ ,  $p=.09$ , nor was there a difference between diagnostic groups in BPRS change  $\chi^2(3)=3.50$ ,  $p=.32$ . BPRS at discharge was positively

<sup>16</sup> Scores represent Estimated Marginal Means (mean proportion score adjusted for co-variables of infant age and maternal age)

correlated with length of stay ( $r_s(50)=.33, p=.02$ ). Abuse history was not associated with diagnostic category (Fisher's exact,  $p=.25$ ).

### Change in MMM Over Course of Inpatient Treatment

A repeated measures ANOVA was conducted to examine if there was change in any MMM variables controlling for maternal and infant age. Table 5 displays the means of MMM variables at admission and discharge. Results reveal no significant change in appropriate  $F(1, 39)=.19, p=.67, \eta^2=.01$  or non-attuned comments,  $F(1, 39)=.05, p=.83, \eta^2=.001$ .

*Table 5. Means and Standard Deviations of MMM within the MBU sample*

	ADMISSION (N=50) Mean (SD)	DISCHARGE (N=43) Mean (SD)
Appropriate comments (proportion)	6.33 (7.36)	6.47 (7.97)
Non-attuned comments (proportion)	3.35 (6.01)	3.39 (4.53)
Total mind-related comments (proportion)	9.69 (9.61)	9.86 (8.84)
	%	%
Proportion with clinical dimension of MMM	12	7

### Severity of Psychiatric Symptoms and MMM within the MBU Sample

Table 6 displays correlations between BPRS and MMM scores. BPRS scores at admission and discharge were unrelated to appropriate mind-related comments. BPRS at admission was negatively correlated with non-attuned mind-related comments, showing that women with greater symptomatology made fewer non-attuned comments at admission ( $r_s(49)=-.28, p=.05$ ) and at discharge ( $r_s(43)=-.41, p=.01$ ). BPRS scores were not associated with overall frequency of speech at admission or discharge. There was no difference between mothers who did and did not make clinical comments in relation to symptomatology at admission ( $U= 113.50, z=-1.72$ , exact two tailed  $p=.09$ ) or discharge ( $U=99.50, z=-1.27$ , exact two tailed  $p=.21$ ).

*Table 6. Correlations between Psychiatric Symptoms and MMM at Admission and Discharge*

	BPRS Admission	BPRS Discharge
Admission		
Appropriate comments (proportion)	.10	.15
Non-attuned comments (proportion)	-.28*	-.10
Total Comments (frequency)	-.06	-.13
Discharge		
Appropriate comments (proportion)	.02	.03

Non-attuned comments (proportion)	-.41**	-.15
Total Comments (frequency)	-.19	-.13

\* $p=.05$ ; \*\* $p=.01$

### History of Abuse and MMM Within the MBU Sample

A series of ANCOVAs were conducted to test if abuse would be related to MMM within the MBU sample, controlling for the severity of psychiatric symptoms at admission, as well as maternal and infant age. All analyses were bootstrapped for 1000 samples. Results of the analyses revealed no difference in mothers with a history of physical or sexual abuse and those without for appropriate comments at admission,  $F(1, 44)=1.82, p=.25, \eta^2=.04$ , or discharge  $F(1, 38)=.11, p=.79, \eta^2=.003$ . This was also the case for non-attuned comments at admission  $F(1, 44)=1.10, p=.31, \eta^2=.02$  and discharge  $F(1, 38)=.20, p=.61, \eta^2=.005$ . There was no difference between abused and non-abused mothers in overall mind-related comments at admission  $F(1, 44)=2.98, p=.12, \eta^2=.06$  or discharge  $F(1, 38)=.26, p=.62, \eta^2=.01$ . Finally, mothers who were abused did not differ from non-abused mothers in their likelihood to make clinical comments at admission (Fisher's exact,  $p=1.00$ ) or at discharge (Fisher's exact,  $p=.13$ ). Table 7 displays descriptive statistics for MMM in the abused and non-abused group.

*Table 7. Descriptive Statistics of MMM by Abuse Status within the MBU Sample*

	ADMISSION Mean (SD)	DISCHARGE Mean (SD)
Abused		
Appropriate comments (proportion)	7.77 (7.95)	6.58 (8.94)
Non-attuned comments (proportion)	4.29 (7.13)	3.93 (5.42)
Total mind-related comments (proportion)	12.06 (10.42)	9.81 (8.74)
Non-abused		
Appropriate comments (proportion)	5.55 (5.60)	6.32 (6.79)
Non-attuned comments (proportion)	2.16 (3.10)	2.76 (3.26)
Total mind-related comments (proportion)	7.71 (6.52)	9.08 (7.41)
	%	%
Abused		
Clinical Comments	10	5
Non-abused		
Clinical Comments	8	15

## Discussion

The current study investigated maternal mind-mindedness in a sample of mothers with severe mental illness following childbirth and a comparison group of new mothers with no mental illness. A primary aim of the study was to measure self-reported childhood abuse in a sample of postpartum mothers with severe mental illness and examine this in relation to maternal mind-mindedness. A secondary aim was to extend original work by Pawlby et al. (2010), by including additions to the mind-mindedness scheme to determine if this would increase sensitivity of the scheme to differentiate between clinical and non-clinical samples of mothers. In addition to these aims, the degree to which severity of psychiatric symptoms may be associated with maternal abuse history and maternal mind-mindedness was also explored.

In line with hypotheses, mothers who had been admitted to an MBU were significantly more likely to have experienced all forms of childhood abuse. A total of 78% of the MBU sample experienced at least one form of emotional, physical or sexual abuse in childhood, with just over half (53%) reporting an experience of physical or sexual abuse. These findings are in line with other studies that have described rates of self-reported childhood physical and sexual abuse within samples of female in-patients (Cloitre, Tardiff, Marzuk, Leon, & Portera, 1996; Shack, Averill, Kopecky, Krajewski, & Gummattira, 2004; Wurr & Partridge, 1996) but it is only the second study (see Buist, 1998) that we are aware of to describe the prevalence of maternal childhood abuse in a perinatal inpatient setting. In Buist's (1998) sample, a greater proportion of women reported sexual abuse (50%) and fewer reported emotional or physical abuse (16%) than was the case in the present sample. In contrast to many studies of female in-patient samples, this study also measured rates of antipathy and emotional neglect from a caregiver and showed that women who were exposed to emotional abuse in childhood were 10 times more likely than those not exposed to experience severe mental illness within the perinatal period.

The current study measured MMM in a sample of mothers with severe mental illness and a sample of mothers recruited from the same local area with no mental health problems. Mothers were compared in terms of the proportion of appropriate, non-attuned and overall mind-related comments, in addition to the presence or absence of maternal comments that were defined as part of the 'clinical dimension' of MMM. As hypothesised, there was no significant difference between MBU and comparison mothers in relation to appropriate or

non-attuned mind-related comments. However, in contrast to the study hypotheses, there was a trend for MBU mothers to make more, rather than fewer, mind-related comments (when appropriate and non-attuned comments were combined) than comparison mothers. The addition of a clinical dimension to MMM did not improve the sensitivity of the scheme to differentiate between clinical and non-clinical mothers. In general, maternal comments rated in this dimension were relatively rare (20% or less of the combined sample making such comments), but this study found that mothers with and without a mental health diagnosis were equally likely to speak to their infant in developmentally inappropriate ways (in terms of content or requests) or make mind-related comments in a hostile tone. Mothers who made comments defined within the clinical dimension were less likely to make appropriate mind related comments, and there was a trend for these mothers also to make more non-attuned comments. Thus, despite this dimension not differentiating between clinical and non-clinical groups, the dimension relates to other aspects of MMM in ways that might be expected. Future studies with high risk groups may wish to rate these maternal comments within larger samples and examine how they relate to other maternal correlates and later child outcomes to identify more clearly if there is any benefit to this addition to the MMM scheme.

In contrast to the study hypotheses, when MMM was compared between mothers with and without a history of childhood physical or sexual abuse, no difference was observed between abused and non-abused mothers in terms of appropriate or non-attuned mind-related comments. It was only overall mind-related comments that significantly differentiated abused and non-abused mothers, with abused mothers making significantly more comments overall, and this effect only existed when admission videos were used within the analyses. Due to the high concordance between mental health status and childhood abuse, mothers were also classified into one of four categories, based on the presence and absence of each risk factor (mental health diagnosis and history of childhood abuse) in an effort to disentangle effects associated with each. Findings from these post-hoc analyses show that the abused MBU mothers made significantly more overall mind-related comments when compared with non-abused well mothers, where the difference was not significant between the non-abused well mothers and non-abused MBU group. Again, this difference was only present when admission videos were used, suggesting that as the MBU mothers recovered from their illness, the frequency of mind-related comments may have become more in line with well mothers. Although data from the MBU sub-sample did not show a difference in mind-mindedness between admission and discharge, or between abused and non-abused mothers, it is likely

that the larger sample provided greater statistical power to detect a difference. Although a medium effect size was observed when groups were compared in terms of overall mind-related comments, a post hoc power analysis suggest that a total of 128 participants would be required to detect a between group difference with a medium-effect size and with 80% power<sup>17</sup>. The a priori power calculation for this investigation was computed based on a prior study that used an 'offline' measure of parental mentalising (Reflective Functioning from the Parent Development Interview) and related this to a continuous measure of maternal history of abuse (Pajulo et al., 2010). It may be that an 'online' measure of mentalising such as mind-mindedness, or the brief (3 minutes) nature of the interaction used to measure MMM in this study, required a larger sample than was anticipated.

It should be noted at the outset that these findings must be considered cautiously and warrant replication due to the small sample sizes of the groups. As a consequence of the very small number of abused women in the comparison group it is difficult to know if abuse is a risk factor in and of itself (i.e., distinct from psychopathology) for mothers to make greater mind-related comments. Although findings from this study suggest that it may be the mothers who have both a mental illness and a history of abuse who are most likely to make increased mind-minded comments, the sample sizes of the groups are small, limiting the generalizability of the findings. Visual inspection of the means (see Figures 1 & 2) suggest that there may be an incremental increase in mind-related comments as risk factors increase; however, because differences were only detected between the most extreme groups this is only speculative. Future research with a larger group of psychiatrically well women with a history of childhood abuse and a community sample of mothers with SMI (i.e., not receiving treatment from a specialist inpatient ward), would help to further elucidate the relationship between maternal history of abuse and mind-mindedness.

The current findings are in contrast to those found by Pawlby and colleagues (2010) who found no difference between the MBU and comparison group in terms of mind-related comments (and where there was trend for a difference, it was in the direction of a reduced likelihood of depressed MBU mothers to make appropriate mind-related comments). One possible explanation for the different findings in the current study could be the distribution of diagnostic categories within the MBU group between the two studies. In particular, there

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<sup>17</sup> This power analysis was revised to reflect the kind of analysis that was conducted for the primary hypothesis (ANCOVA).

were far more mothers with schizophrenia in the Pawlby et al. (2010) study, whereas the current study only had two mothers with a diagnosis of schizophrenia, due to a small number of women with schizophrenia being admitted to the ward during the period of recruitment. Although, Pawlby and colleagues did not find a difference between mothers with schizophrenia and other diagnostic groups, it could be hypothesised that mothers with schizophrenia may be more likely to show socio-cognitive deficits (Fett, Viechtbauer, Penn, van Os, & Krabbendam, 2011) and therefore would be less likely to make mind-minded comments about their infant. The present study also included a larger sample of mothers with a primary diagnosis of severe depression and some mothers with severe anxiety disorders (a group of mothers who were not included in the Pawlby et al (2010) study). The inclusion of an anxiety disorder category in the MBU sample was due to a noticeable increase in the number of women with a primary diagnosis of anxiety (in particular obsessive compulsive disorder) being admitted to the MBU, where this was once quite rare.

In addition to issues related to diagnosis, the present study also differed from Pawlby et al. (2010) in that the observations were based on free play not face-to-face chair interactions. Prior research has observed greater disrupted maternal behaviour during free play interactions without toys (when compared to free play with toys), suggesting that face-to-face interactions may be experienced as more stressful for mothers due to the whole responsibility for engaging the infant being placed on the mother herself (Madigan, Moran, & Pederson, 2006). Although not all mothers in the present sample engaged with toys during the free play, it is possible that overall, the present study observations were less stressful for mothers than was the case in Pawlby et al., (2010) and that this could explain the different findings between the two studies. Future research is underway that intends to compare MMM in face-to-face versus free play interactions in mothers from the MBU that will help to answer this question (Meins, personal communication).

Although the current findings are contrary to hypotheses based on the expectation that mothers with a history of childhood abuse would demonstrate a reduced likelihood to be mind-minded about their infants, the results are consistent with recent research in non-parenting populations that has described a tendency for individuals with a diagnosis of (or traits of) Borderline Personality Disorder (BPD) to 'hypermentalize' or over attribute mental states to others (Arntz, Bernstein, Oorschot, & Schobre, 2009; Sharp & Vanwoerden, 2015). BPD is a disorder characterised by difficulties in affect regulation, interpersonal functioning

and identity, is commonly present alongside other mental disorders such as depression and anxiety, and is often associated with a history of childhood abuse (Johnson, Cohen, Brown, Smailes, & Bernstein, 1999; Lobbetael, Arntz, & Bernstein, 2010; Zanarini et al., 2014). Sharp et al. (2013) describe hypermentalizing as an altered style of mentalizing where assumptions are made about other people's mental states that go far beyond what the observable information might suggest. It is believed that this style of mentalizing is a consequence of a heightened social sensitivity in individuals with BPD. Unfortunately, the present study is not able to say if personality disorder diagnoses could be related to patterns of MMM as only three mothers in this sample had a formal diagnosis of emotionally unstable personality disorder (EUPD; WHO, 1992, diagnosis which is equivalent to BPD in the UK). It should be noted however that a number of mothers were described as having emotionally unstable 'traits' in their hospital notes, suggesting that future research may wish to consider these traits in relation to mother's early experiences and a propensity to hypermentalise about their infant.

However, regardless of personality disorder specifically, neurocognitive research from samples of adults and children with abuse histories could offer some insight into why abused mothers may be more likely to 'over attribute' mind-related comments to their infants. Individuals with a history of abuse have been found to show hypersensitivity to threatening facial expressions (Dannlowski et al., 2013; Dannlowski et al., 2012; McCrory et al., 2011), and this hypersensitivity may even extend to the processing of heightened affect in general (i.e., both positive and negative facial expressions; McCrory et al., 2013), sensitivity that would be adaptive when the behavioural responses of others has historically been unpredictable (i.e., when abuse is present). Childhood abuse has also been related to poorer performance on tasks measuring cognitive flexibility (e.g., ability to adapt a response based on new information), particularly under affective conditions (Caldwell, Krug, Carter, & Minzenberg, 2014; Spann et al., 2012). Therefore, considering these findings, it seems feasible that heightened sensitivity to infant cues and difficulty in attentional switching could be one possible route through which abused mothers may make more mind-related comments than non-abused mothers. In the present study it was noted that some mothers asked the infant a great deal of clarifying mind-related questions (e.g., "Do you like that?"), rather than declarative mind-related statements (e.g., "You like that"), leaving the observer with a sense that these mothers were perplexed by their infant's changing states. It was also noted that there was a tendency for some mothers to perseverate on internal state attributions (e.g.,



referring to the infant's previous upset at a later time once the infant state had changed and therefore the attribution was no longer deemed appropriate), suggesting a possible difficulty being able to flexibly adopt a mentalistic stance towards the infant. It may be that for some MBU mothers, particularly those with abusive early experiences, the opacity of the infant's internal world is perceived as unfathomable, or even threatening, and this results in the mother desperately trying to understand what the infant might be thinking. This may mean that sometimes the mother gets it "right" (i.e., appropriate mind-related comments) but that it also increases her chances of misinterpreting her infant's state (i.e., non-attuned comments); thus accounting for the greater *overall* mind-related comments observed in mothers with an abuse history in this study.

Finally, findings from the current study showed that *lower* psychiatric symptoms as measured using the BPRS were related to greater non-attuned comments. It is possible that this is a consequence of the BPRS being a measure more suited to measuring psychiatric severity in individuals with psychotic disorders specifically (Mueser, Curran, & McHugo, 1997) and therefore does not accurately capture symptom severity across the range of mental health disorders that are currently observed within perinatal inpatients settings (e.g., accounting for emotional instability and anxiety). Moreover, the BPRS may not be sensitive to other domains of mental health that are related to caregiving in general or mind-mindedness in particular (e.g., self-reported depressive symptoms, perceived parenting stress or perception of the infant; Field et al., 1985; McMahon, Barnett, Kowalenko, & Tennant, 2005; McMahon & Meins, 2012; Pereira et al., 2012).

There a number of limitations of the present study which must be considered when interpreting the findings and which highlight considerations for future research. First, although raters of MMM were not aware of mother's maltreatment status, it was not possible for raters to be unaware of mental health status. Secondly, mothers in the MBU and comparison group were observed interacting with their infant in different settings. In contrast to the MBU mothers who were observed in the inpatient setting, comparison mothers were observed at home. Ideally, mothers would be observed in the same environment (i.e., lab or home) particularly given the possibility that these different contexts may be associated with different levels of stress for the mother and may affect the quality of the interaction (Belsky, 1980). Another avenue for future research could be to measure MMM in response to infant distress and non-distress cues, as this may reveal more meaningful differences in terms of

mother's overall propensity to be mind-minded and/or in terms of the accuracy of mind-minded comments. This suggestion is made in light of other research which has described pertinent caregiving differences in response to infant distress and non-distress (e.g., McElwain & Booth-LaForce, 2006), and that infant distress may be more likely to result in a breakdown of the caregiving response in mothers with an abuse history (Lyons-Ruth & Speilman, 2004). A third limitation of the study is that maternal history of childhood abuse was based on retrospective self-report. Although self-report measures are believed to be most reliable when behaviourally phrased questions of abuse are used such as was the case in this study, it is possible that within both groups there was an under-reporting of abuse (Hardt & Rutter, 2004). The small number of abused women in the comparison group would also suggest that future research will require large samples to increase the likelihood of obtaining some women who may have a history of physical or sexual abuse in the absence of psychopathology. A final consideration is that the standard deviations of MMM within the MBU group were large, although the degree of variance was reduced somewhat when the model was adjusted for maternal and infant age. Examination of the four-way groups indicates that the greatest variability in scores is within the abused group of the MBU sample and this was particularly the case when mothers were most acutely unwell (i.e., videos recorded near admission). Although the large variance in MMM for this group does warrant some caution in interpreting the findings as it may exaggerate differences between groups, it nevertheless points to valid differences in mothers' spontaneous propensity to mentalise about their infant, highlighting the crucial need for future research to identify what factors can better account for these individual differences.

In addition, it should be noted that this study did not account for differences in how mothers spoke about their past adverse experiences. At least within the sample of MBU women, it was noted that some women had previously explored (e.g., psychotherapy) or were able to reflect on their experiences (e.g., why the caregiver may have behaved in the way that they did, how the abuse affects them now or did in the past), while others had never disclosed the abuse before and would strongly deny being affected by the abuse or appeared psychologically confused or overwhelmed when describing the events they had experienced. These observations suggest that a woman's degree of 'resolution' about, or her ability to reflect on, her early adverse experiences may reveal individual differences within mothers who have experienced abuse that may be relevant for predicting MMM. Attachment theory would suggest that it is how a mother thinks about her early experiences that is especially pertinent

for the relationship she develops with her child (George, Kaplan, & Main, 1996; Kelly, Slade, & Grienenberger, 2005). Moreover, there is evidence that self-reported abuse experiences are highly related to 'unresolved' state of mind with respect to attachment as measured by the AAI (Bailey, Moran, & Pederson, 2007; Bakermans-Kranenburg & van IJzendoorn, 2009; Madigan, Vaillancourt, McKibbin, & Benoit, 2012), though it is not clear from these studies if it is the abuse itself or the lack of resolution about these events that is related to the caregiver-infant relationship (Bernier & Meins, 2008). Nevertheless, with respect to MMM, prior research has considered reflective functioning and the coherence of the mother's description of her early attachment relationships and found these maternal capacities to be related to certain aspects of MMM (Arnott & Meins, 2008; Demers et al., 2010). Together, this suggests that considering how mothers *think about* their early abusive experiences may be a fruitful avenue for future research examining MMM in mothers with severe mental illness.

This study is the first to report rates of childhood abuse in relation to a sample of mothers with severe mental illness in the UK and the first to examine childhood abuse in relation to maternal mind-mindedness. Results from the current study suggest that women who experience severe mental illness within the perinatal period are very likely to have experienced some form (if not multiple forms) of abuse in childhood. This has implications both for the mother herself and the quality of the relationship she develops with the infant. Given that a past history of depression and interpersonal risk factors (e.g., marital conflict and low social support) increases the risk for depression in the perinatal period (Marcus, Flynn, Blow & Barry, 2003; O'Hara & Swain, 1996), it is possible that women with abuse histories may be particularly challenged by the transition to motherhood due to difficulties they have negotiating interpersonal relationships and a more chronic and non-specific mental health profile. The current study would also suggest that mothers that have been abused may be particularly sensitive to their infant's internal states and may have a tendency to over-attribute mind-related comments to their infant. However, the design of the current study cannot speak to the question of what the relative contribution of mental health status or a history of childhood abuse may be for MMM. Moreover, it is not clear what it is about these risk factors that may influence how mothers think about their infants. Future research should seek to study these questions in better selected samples and by measuring possible mediating factors between maternal history of abuse and maternal mind-mindedness.

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## A.1. Range of MMM Scores

Table 8. Median and Range of Scores for MMM Variables

	ADMISSION				DISCHARGE			
	MBU		Comparison		MBU		Comparison	
	Mdn	Range	Mdn	Range	Mdn	Range	Mdn	Range
Appropriate comments (proportion)	5.22	0-35	4.17	0-17	3.70	0-37	4.17	0-17
Non-attuned comments (proportion)	.81	0-31	0.00	0-25	1.92	0-21	0.00	0-25
Overall MR comments (proportion)	8.70	0-44	5.71	0-25	7.50	0-37	5.71	0-25
Total frequency of comments*	44.50	15-81	52.00	8-92	51.00	2-88	52.00	8-92

## A.2. Discharge Table for MMM by Four Way Group

Table 9. MMM by Four-Way Group using MBU Discharge Videos

	Well & No Abuse (N=38)	Well & Abuse (N=6)	Unwell & No abuse (N=21)	Unwell & Abuse (N=22)
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Appropriate comments (proportion)	4.31 (4.39)	5.17 (3.44)	6.32 (6.79)	6.58 (8.94)
Non-attuned comments (proportion)	2.52 (5.55)	2.28 (2.22)	2.76 (3.26)	3.93 (5.42)
Total MR comments (proportion)*	6.80 (6.12)	7.46 (3.05)	9.08 (7.41)	10.51 (9.97)
Overall comments (frequency)	53.42 (17.62)	51.83 (13.75)	52.24 (21.21)	47.77 (15.94)
	%	%	%	%
Proportion with clinical comments	12	0	7	2



### **A.3 CANDIDATE'S ROLE IN RESEARCH**

The hypotheses for the project were generated by the candidate, with consideration of the data available and in view of her research interests.

Data collection for the study was primarily conducted by other members of the clinical (MBU sample) and research (comparison sample) team. MBU videos are routinely collected by the supervisor of this project (SP) as part of her role on the ward. A proportion of the CECA-Q questionnaires from the MBU sample were collected by the candidate but this was minimized as much as possible to allow for the candidate to be blind for coding.

Psychiatric data for the MBU group was provided by the ward Consultant Psychiatrist and additional demographic data was collated by the candidate and supervisor.

Videos from both the comparison and clinical group were transcribed and coded by the candidate. For those videos where the candidate was not blind to maltreatment status, codes from a second rater were used for analyses.

## A.4 MMM Transcripts from the MBU

### Example Transcript 1 (infant age 4.5 months)

1. What have we got?
1. Aw, look.
2. What's this?
3. Want to get up? [NA] no signal from infant
4. You want to get up, come over here? [NA]
5. You want to get up? [NA]
6. What you got?
7. Want to get up? [NA]
8. Give us your hands. [REQUEST]
9. Oh. [Child].
10. Oi, you want to get up? [NA]
11. You want to get up? Yeah, see. [NA]
12. Oop. You're going to come over.
13. You're a big girl.
14. You're a big girl.
15. Oh, come over here, oh, sit down, look!
16. Wow! Does that go in there?
17. Or did you want that one? [NA] –offers another toy infant did not signal for
18. What did you want? [A] –clarifying
19. What one did you want? [A] –clarifying
20. You can't kick it.
21. Which one do you want? [A]- clarifying
22. Crawl about?
23. Hey, you want to go over to that? [NA] – no signal from infant
24. Crawl over to it
25. Yeah.
26. Oh.
27. There.
28. Where you going?
29. Where you going?
30. Oh.
31. You going to pick your own one.
32. What's in there?
33. What's in there?
34. Oh.
35. The one you had before.
36. The one you picked out before.
37. Remember that one. [A]
38. Ohh.
39. Wow
40. What's over there?
41. You want to stand up. [A]
42. Oh watch it.
43. You want to stand up. [A]
44. Is that what you want? [A]

- 45. Look.
- 46. Now you can't see them.
- 47. You can't see any toys now, look.
- 48. You just going to...
- 49. Oop.
- 50. Put it on there then, put the toy on the box.
- 51. Ah.
- 52. Banging it.
- 53. You want to sit down? [NA]- no signal from infant
- 54. No?
- 55. What have you got?

Example Transcript 2 (infant age 5 months)

1. Trying to play, trying to play, you're trying to play with your face [NA]
2. Oh little one, oh
3. Oooo, (*inaudible*) ooo
4. What's wrong
5. Tell me what's wrong [REQUEST]
6. Tell me you've got more wind in there [REQUEST]
7. Do you got more wind
8. You do
9. Bring it out then
10. For mummy
11. Darling
12. Tell me
13. Well tell me what's wrong baby [REQUEST]
14. What's wrong
15. Give me your little hands [baby and mother's hands are close to each other]
16. Look at those lovely hands
17. Look
18. Look
19. Look
20. Ah look at your lovely hands, ah they're so sweet
21. Hmm
22. Is that what you like? [NA]
23. Look
24. (*inaudible*) your hands
25. You can see the camera
26. You can see it
27. Aw
28. Aw
29. You're my little boy
30. Mummy's little boy
31. Daddy's little boy
32. Mummy and daddy's little boy
33. Ain't that sweet
34. You've got your dad [ADULT]
35. You've got your mum [ADULT]
36. Yes you do
37. Yes you do
38. Yes you do
39. Yes you do
40. Your mummy, and daddy, and we're all going to live as a happy family [ADULT]
41. Yes we are

## A.5 CECA-Q

### FAMILY RELATIONSHIPS IN CHILDHOOD

#### CECA-Q

#### 1. WHO BROUGHT YOU UP BEFORE AGE 17

Please write below the *Parent Figures* who brought you up in childhood. List each family arrangement with different parent figures which lasted *one year or longer*.

Consider natural parent, step-parent (including parent's live-in partner), aunt, friend of the family, adoptive parent, foster parent etc.

Fill in the first family arrangement below. For example, if this was with your natural parents, write in 'Mother' and 'Father' and age '0'; or if this was with just your mother write in 'Mother', put 'No father figure' in the father column, and age '0'.

Family arrangement	Mother figure	Father figure	Your age at start
<b>FIRST family</b>	1a	1b	1c

If you have lived in *more than just one* family arrangement, such as with mother and stepfather, then list them below, together with the age you were when the arrangement began.

Family arrangement	Mother figure	Father figure	Your age at start
<b>SECOND family</b>	1d	1e	1f
<b>THIRD family</b>	1g	1h	1i
<b>FOURTH family</b>	1j	1k	1l
<b>FIFTH family</b>	1m	1n	1o

1p **\*\*Were you ever in a children's home or institution before age 17? YES NO**  
(please circle the appropriate answer)

If 'YES' fill in the boxes below. If 'NO' skip to question 2 overleaf

<b>TYPE OF INSTITUTION</b> e.g. local authority care, hospital, boarding school	<b>age when you started</b>	<b>age when you left</b>
<b>1<sup>st</sup></b> (1q)	1r	1s
<b>2<sup>nd</sup></b> (1t)	1u	1v

## 2. PARENTAL LOSS

Please circle the appropriate answers, and write in the age you were when it happened.

	<b>MOTHER</b>	<b>FATHER</b>
2a. Did either parent die before you were aged 17?	YES NO	YES NO
If YES, what age were you?	2b	2c

	<b>MOTHER</b>	<b>FATHER</b>
2d. Have you ever been separated from your parent <i>for one year or more</i> before the age of 17?	YES NO	YES NO

If YES, then fill in the boxes below; if NO then SKIP to question 3 overleaf.

	<b>MOTHER</b>	<b>FATHER</b>
At what age were you first separated?	2e	2f
How long was this separation, in years?	2g	2h
Please circle the reason for the separation:		
Parent's illness (2i)	YES NO	YES NO
Parent's work (2j)	YES NO	YES NO

Parents' divorce or separation (2k)	YES NO	YES NO
Abandoned by parent or never knew parent (2l)	YES NO	YES NO
Other reason (2m)	YES NO	YES NO

2n. Please describe your experience.....

.....

.....

**3. Please circle the appropriate numbers to describe your **Mother Figure, as you remember her in your first 17 years.** If you had more than one, choose the one you were with *the longest*, or the one you found *most difficult* to live with.**

3a. Which mother figure are you describing below?

1. Natural mother
2. Step-mother/father's live-in partner
3. Other relative e.g aunty, grandmother
4. Other non-relative e.g. foster mother, godmother
5. Other (describe).....

	Yes, definitely		Unsure		No, not at all
3b She was very difficult to please	1	2	3	4	5
3c She was concerned about my worries	1	2	3	4	5
3d She was interested in how I did at school	1	2	3	4	5
3e She made me feel unwanted	1	2	3	4	5
3f She tried to make me feel better when I was upset	1	2	3	4	5
3g She was very critical of me	1	2	3	4	5
3h She would leave me unsupervised before I was 10 years old	1	2	3	4	5
3i She would usually have time to talk to me	1	2	3	4	5
3j She would hit me	1	2	3	4	5
3k At times she made me feel I was a nuisance	1	2	3	4	5
3l She often picked on me unfairly	1	2	3	4	5
3m She was there if I needed her	1	2	3	4	5
3n She was interested in who my friends were	1	2	3	4	5
3o She was concerned about my whereabouts	1	2	3	4	5
3p She cared for me when I was ill	1	2	3	4	5
3q She neglected my basic needs (e.g. food and clothes)	1	2	3	4	5
3r She did not like me as much as my brothers and sisters <i>(leave blank if no siblings)</i>	1	2	3	4	5



4. Please circle the appropriate numbers to describe **your Father Figure, as you remember him in your first 17 years**. If you had more than one, choose the one you were with *the longest*, or the one you found *most difficult* to live with.

4a. Which father figure are you describing below?

1. Natural father
2. Step-father/mother's live-in partner
3. Other relative e.g. uncle, grandfather
4. Other non-relative e.g. foster father, adoptive father
5. Other (describe).....

	Yes, definitely		Unsure		No, not at all
4b He was very difficult to please	1	2	3	4	5
4c He was concerned about my worries	1	2	3	4	5
4d He was interested in how I did at school	1	2	3	4	5
4e He made me feel unwanted	1	2	3	4	5
4f He tried to make me feel better when I was upset	1	2	3	4	5
4g He was very critical of me	1	2	3	4	5
4h He would leave me unsupervised before I was 10 years old	1	2	3	4	5
4i He would usually have time to talk to me	1	2	3	4	5
4j He would hit me	1	2	3	4	5
4k At times he made me feel I was a nuisance	1	2	3	4	5
4l He often picked on me unfairly	1	2	3	4	5
4m He was there if I needed him	1	2	3	4	5
4n He was interested in who my friends were	1	2	3	4	5
4o He was concerned about my whereabouts	1	2	3	4	5
4p He cared for me when I was ill	1	2	3	4	5
4q He neglected my basic needs (e.g. food and clothes)	1	2	3	4	5
4r He did not like me as much as my brothers and sisters <i>(leave blank if no siblings)</i>	1	2	3	4	5

## 5. CLOSE RELATIONSHIPS IN CHILDHOOD

(please circle as appropriate – if you circle NO to any question, SKIP the rest of that section and go on to the next one)

**5a When you were a child or teenager, were there any ADULTS you could go to with your problems or to discuss your feelings?**

YES NO

5b If YES: Who was that? (circle more than one if relevant)

1. mother / mother figure
2. father / father figure
3. other relative
4. family friend
5. teacher, vicar etc
6. other (describe) .....

5d Do you want to note anything about the relationship(s)? .....

**5e Were there other CHILDREN/TEENAGERS your age that you could discuss your problems and feelings with?**

YES NO

5f If YES: Who was that? (circle more than one if relevant)

1. sister
2. brother
3. other relative
4. close friend
5. other less close friend(s)
6. other person (describe).....

5h Do you want to note anything about the relationship(s)?.....

**5i Who would you describe as the TWO CLOSEST people to you as a child/teenager?** (circle up to two)

1. mother / mother figure

2. father / father figure
3. sister or brother
4. other relative
5. family friend (adult)
6. friend your age
7. other (describe) .....

5k Do you want to note anything about the relationship(s)?.....

**6. PHYSICAL PUNISHMENT BEFORE AGE 17 BY PARENT FIGURE OR  
OTHER HOUSEHOLD MEMBER**

**6a When you were a child or teenager were you ever hit repeatedly with an implement (such as a belt or stick) or punched, kicked or burnt by someone in the household?**

**YES NO**

If YES, then fill in the boxes below; if NO then SKIP to question 7 overleaf.

	<b>MOTHER FIGURE</b>	<b>FATHER FIGURE</b>
How old were you when it began, in years?	6b	6c
Did the hitting happen on more than one occasion?	6d YES NO	YES NO
How were you hit?	6e 1. belt or stick 2. punched/kicked 3. hit with hand 4. other	6f 1. belt or stick 2. punched/kicked 3. hit with hand 4. other
Were you ever injured e.g. bruises, black eyes, broken limbs?	6g YES NO	YES NO
Was this person so angry they seemed out of control?	6h YES NO	YES NO

6i. Can you describe these experiences .....

**6j. Did you experience this from anyone else in the household? YES NO**

6k. If YES: describe your experiences.....

**7. UNWANTED SEXUAL EXPERIENCES BEFORE AGE 17**

(please circle as appropriate)

**7a. When you were a child or teenager did you ever have any unwanted sexual experiences?** YES NO UNSURE

**7b. Did anyone force you or persuade you to have sexual intercourse against your wishes before age 17?** YES NO UNSURE

**7c. Can you remember any upsetting sexual experiences before age 17 with a related adult or someone in authority e.g. a teacher?** YES NO UNSURE

If NO to all these, FINISH

If YES or UNSURE to any of them, then please complete the following questions:

	FIRST EXPERIENCE	SECOND EXPERIENCE
What age were you when it began (in years)?	7d	7l
Was the other person someone you knew?	7e YES NO	7m YES NO
Was the other person a relative?	7f YES NO	7n YES NO
Did the other person live in your household?	7g YES NO	7o YES NO
Did this person do it to you on more than one occasion?	7h YES NO	7p YES NO
Did it involve touching private parts of your body?	7i YES NO	7q YES NO
Did it involve touching private parts of the other person's body?	7j YES NO	7r YES NO
Did it involve sexual intercourse?	7k YES NO	7s YES NO

7t. Can you describe these experiences?.....

## A.6 CECA-Q ADMINISTRATION PROTOCOL

### Guidelines for Administering the CECA-Q at the MBU

#### Identifying People to Complete CECA-Q

All people admitted to the ward should be considered

#### Timing

As a general rule, the CECA-Q is administered once the mother is settled on the ward, but not too long into their stay. This allows for follow up should disclosures arise or if the process brings up emotion.

#### Other considerations

##### Current mental state

For those women who are acutely psychotic or thought disordered, delay may be required until they are able to answer more coherently

##### Not fluent English speaker

When the client is not fluent in English, the CECA-Q can be administered with an interpreter, if that is possible. It is our experience that some questions do not directly translate but if the mother or the interpreter raises this, it can be indicated on the questionnaire. [Please also indicate on the transcript when an interpreter was used.]

##### Known History of Abuse

If there is a known abuse history for a particular client, be aware of this in terms of sensitivity around the questions- including offering if they would like to have anyone in the room with them (e.g., partner, nurse), reassuring them that they can stop at any time and do not have to answer any questions they are not comfortable with (*also see later section for further details about disclosures*)

#### Introducing the CECA-Q

What to say when you approach a mother about the CECA-Q

*"We invite all mothers who come onto the ward to meet with us to answer some questions about their own childhood experiences. This is to help us to understand better the needs of mothers on the ward. It usually takes about 30 minutes. When could we arrange a time to do this?"*

#### Administering the CECA-Q

Indicate the date, name of the person administering the interview and anyone one else in the room on the top of the questionnaire

Start with something like: *"Can you start by telling me who was in the house with you when you were growing up..."* Then ask questions until you have got all family arrangements from birth to age 17

For Section 2d Separation – refers to separation from a parent for a year or more.

If they had irregular contact with a parent (e.g., following a divorce) but there was no extended separation, then this would NOT be considered separation.

NB Divorce in the absence of extended separation is captured by the number of family arrangements (e.g., see below for example of father not living in the main home from age 5)

Family arrangement	Mother figure	Father figure	Your age at start
FIRST family	biological	biological	0
SECOND family	biological	none	5

Following Sections 3 & 4 (questions about Mother or Father)

Please ask “*Is there anything else you want to say about your relationship with your [mother/father] when you were growing up?*” and record what they say in the comment section

Section 6: physical punishment

For the section about how they were hit please circle all that apply (e.g., more than one method if that applies)

Section 7: sexual experiences

Sometimes there are more than 2 unwanted sexual experiences, if this is the case, repeat the columns of follow up questions on the back page and ask the same questions

If the person is sharing a lot and the interview is taking a long time you may want to ask the person if they would like to break and finish it another day. Give them the choice.

**After Administering the CECA-Q**

Ask something like

*“What was that like going through those questions with me?” “How are you feeling now?”*

If the person appears distressed, says they are feeling upset or during the interview discloses abuse that they say they haven’t told anyone before you can ask

*“Have you ever talked to anyone else about these kinds of things before?”*

If so *“What was that like?”*

If not, *“Is there any reason you haven’t talked with anyone about it?”, “Would you like to talk to someone about it?”*

If the person is distressed or spoke about difficult things, explain that you will tell the nursing team that you have just completed the CECA with them and that they can go to the nurses

anytime if they want to talk or just feel a bit wobbly. Confirm if the mother feels able to approach the nurses.

If the mother voices that she would like to talk to someone about these experiences in more detail, tell her that you will pass it on to the psychology team who will arrange to meet with her for a session to think about what kind of support might be most helpful/appropriate

### **Other Issues**

Confidentiality: Sometimes mothers express concerns about confidentiality. If this comes up, you can explain that the details of what they say will be kept anonymously but that usually basic information is shared with the team. You may want to ask what their concerns are about sharing with the team and try to reassure them about this. In some cases mothers do want you to tell details about what they discussed to the team and in that case you can write a more detailed note in epjs

Safeguarding: For the most part disclosures about abuse are retrospective or the person may not know the person. If there are concerns about a person's current safety or the alleged abuser may still have contact with children and could be a risk, discuss this with psychology to get their opinion on what further action needs to be taken

Discussion regarding psychology follow-up: Email or speak to Janice to explain the context in which the mother described wanting to meet with psychology

### **Checklist after Administering**

Find a nurse to tell them that you completed the CECA-Q with the person so they are aware

Please enter a brief entry to epjs to say that the CECA-Q was administered. Just give a brief overview of how the mother presented during the interview and any further action that was taken after the meeting (e.g., handed over to nurses, refer to psychology, etc)

Email Janice and her trainee if there was a wish to meet with psychology

### **Follow up by Psychology**

Offer a stand alone session to speak with the mother about what she brought up in the interview to explore what would be most appropriate (e.g., some sessions on the ward or arranging longer term psychology work in the community).

If the mother is already being seen by psychology on the ward then their therapist can discuss this with them. If they are not linked in with psychology, then Janice or her trainee will arrange to meet with the mother to discuss

Update the person who administered the CECA-Q regarding what next step was decided



## A.7 CONSENT FORM FOR MBU MOTHERS

### INSTITUTE OF PSYCHIATRY/SOUTH LONDON AND MAIDSLEY NHS TRUST

#### Consent Form - Recorded Interviews

I consent to the recording of an interview with me/my relative being made and kept on videotape/audiotape.

I understand that this recording may be used for purposes of assessment, teaching or research. Strict confidentiality will always be observed, and it will be seen only within the Institute of Psychiatry and South London and Maidsley NHS Trust by professional staff or their trainees.

I understand that I will be further consulted before this recording is shown to a wider audience. (Any permission for wider showing to be noted here and separately signed and dated).

#### NAMES OF ALL THOSE APPEARING ON THE RECORDING

AGE  
(if under 18)

SIGNATURES

.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

#### NAME OF PARENT OR RELATIVE SIGNING ON BEHALF OF A CHILD OR PATIENT UNABLE TO GIVE CONSENT

AGE

SIGNATURE

.....	.....
-------	-------

Name of Interviewer

Signature of Interviewer

.....	.....
-------	-------

Name of Consultant (Hospital Patients only)

Date

.....	.....
-------	-------

Serial No. of tape .....

This form must be signed at the conclusion of the recording by all those who appear on the recording. In the case of young children, the parent or guardian should sign, or in the case of patients unable to give consent, their nearest relative should sign on their behalf.

The completed form should be filed in the notes of the case.

## A.8 INFORMATION SHEET FOR MBU MOTHERS

South London and Maudsley   
NHS Trust

### Study of mother-infant interaction: information sheet and consent form

We are asking you to give your permission for us to use the videotaped interaction of you and your baby in a research study. We will be looking at how a mother's ill-health after childbirth might affect the way in which a mother and baby play together and how that might change as the mother recovers. We also need your permission to ask you questions about your health and to look at your hospital case-notes.

Supporting mothers and babies in getting to know one another is an important part of the routine care provided on the Mother and Baby Unit. One of the ways we do this is by making a 5-minute videotaped recording of you and your baby playing together and then discussing with you how you and your baby are getting on. During the first week of your admission you are invited to play with your baby, during which time a video recording will be made. This will be repeated when you are discharged.

The usual rules of confidentiality will apply to all information collected in this study. You will not be identified in any reports or publications. The videotapes are kept in a secure place and no names are kept with the tapes. They will be destroyed at the end of the study. Your participation is entirely voluntary and you may withdraw from the study at any time without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect any care or treatment you receive.

For more information about the study, please contact Susan Pawlby on the Mother and Baby Unit, Bethlehem Royal Hospital, Monks Orchard Road, Beckenham, BR3 3BX (020 8776 4265).

I have read the information sheet about this study and freely agree that the videotapes made of my baby and myself can be used for this study. I agree that my hospital notes can be read in relation to this study. I understand that I may withdraw this consent at any time without giving a reason.

Name (please print) \_\_\_\_\_

Signed \_\_\_\_\_

Baby's name \_\_\_\_\_ Date of birth \_\_\_\_\_

Date \_\_\_\_\_

Researcher's statement:

I have explained the study on mother-infant interaction to the participant

Signature of researcher \_\_\_\_\_ Date \_\_\_\_\_

## A.9 AUDIT APPROVAL FOR CECA-Q AT MBU

<b>1(a) Project lead details:</b>	
<b>Name:</b> Gertrude Seneviratne	<b>Job title:</b> Consultant Psychiatrist
<b>Work Address:</b>  Channi Kumar Mother and Baby Unit (MBU), Bethlem Royal Hospital, Monks Orchard Road, Beckenham, BR3 3BX	
<b>Telephone:</b> 0203 228 4265	<b>E-mail:</b> gertrude.seneviratne@slam.nhs.uk
<b>1(b) Project Title:</b> Clinical audit of current caseload at the Channi Kumar Mother and Baby Unit relating to their experiences of childhood abuse.	
<b>Project start date:</b> 04/01/2013	<b>Project end date:</b> Ongoing
<b>1(c) Please tick ✓ one box: Is this project a:</b>	
<b>Clinical Audit (e.g. Measures a standard)</b> <input checked="" type="checkbox"/>	<b>A Service Evaluation (e.g. Patient Survey)</b> <input type="checkbox"/>
<b>1(d) Which CQC Standards does this audit relate to: Please tick ✓ relevant boxes:</b>	
Involvement and Information <input checked="" type="checkbox"/>	Personalised Care, Treatment and Support <input checked="" type="checkbox"/>
Safeguarding and Safety <input checked="" type="checkbox"/>	Suitability of Staffing <input type="checkbox"/>
Quality Management <input checked="" type="checkbox"/>	Suitability of Management <input type="checkbox"/>
<b>2 (a) Overall project aim or purpose of the audit</b>  To determine the prevalence of childhood experiences of abuse in the caseload at the Channi Kumar Mother and Baby Unit (MBU), and ensure the service continues to provide therapeutic support to those women with such prior experiences.	
<b>2(b) Specific objectives. What are the audit standards or criteria?</b> The definition of a clinical audit is that it compares practice to agreed standards such as those defined in NICE guidelines and clinical policies, protocols and procedures. Please also state the source of your standards or criteria  N/A	
<b>2 (c) Does the project relate to an area of Trust Policy?</b> Please check the Policy site on SLaM Intranet.  Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>  <b>If Yes, please state which policy:</b> SLAM Policy for the Care and Support of Pregnant Women with a Diagnosis of Severe Mental Illness	

**2 (d) If the project relates to an area of Trust policy, please confirm that the standards and criteria in the clinical audit have been drawn from standards within the Trust policy?**

Yes ☐ No ☐ N/A

Comments: \_\_\_\_\_

**2 (e) Have you submitted your proposed audit data collection tool or questionnaire along with this Project Proposal for approval?**

Yes ☒ No ☐

**Comments:** Enclosed is a copy of the tool (measure) for capturing childhood experiences of abuse.

**2 (f) Does the data collection tool or questionnaire clearly and accurately monitor the standards outlined above?**

Yes ☒ No ☐

**Comments:** This is a validated tool (measure) for capturing childhood experiences of abuse.

**2 (g) In which ways do you think the project will improve patient care / outcomes?**

Through capturing the childhood experiences of abuse of the MBU caseload on an ongoing basis, we anticipate that this will lead to improvements in the therapeutic service and ensure a certain standard of care is maintained by the multi-disciplinary team to all mothers on the MBU.

**3 (a) Type of project Please Tick ✓ where appropriate – more than one might apply**

(A) National	<input type="checkbox"/>	Re-audit	<input type="checkbox"/>	High risk	<input type="checkbox"/>
(B) Trust-wide	<input type="checkbox"/>	Across primary/secondary interface	<input type="checkbox"/>	High volume	<input type="checkbox"/>
(C) Directorate/CAG	<input type="checkbox"/>	Multidisciplinary	<input checked="" type="checkbox"/>	Issue of local concern	<input type="checkbox"/>
(D) Team based	<input checked="" type="checkbox"/>	Uni-disciplinary	<input type="checkbox"/>	Wide variation in practice	<input type="checkbox"/>

Other (please state):

**3 (b) Does your project criteria apply to any of the following? If so Please Tick ✓ where appropriate**

NHS Litigation Authority (NHSLA)	<input type="checkbox"/>	Risk Register (high risk)	<input type="checkbox"/>	Complaints	<input type="checkbox"/>
Trust Policy	<input type="checkbox"/>	CQC	<input checked="" type="checkbox"/>	Patient Survey	<input checked="" type="checkbox"/>

NICE Guidance	<input type="checkbox"/>	Business Plan	<input type="checkbox"/>	DOH Policy Implementation Guidance	<input type="checkbox"/>
National Audit	<input type="checkbox"/>	Improving working lives	<input type="checkbox"/>	Issue of local concern	<input type="checkbox"/>
Any Other (please state)					

**4(a) Who will be on the audit steering group?** Gertrude Seneviratne (Consultant Psychiatrist), Susan Pawlby (Developmental Psychologist), Eleanor Filgate (Researcher) and Afifa Ashfaque (Nursery Nurse on the MBU)

**4(b) What consideration has been given to the involvement of patients, carers or the public?**

- ☒ Full user involvement at all stages of the audit
- ☐ Partial user involvement : please state what stages \_\_\_\_\_
- ☐ No user involvement (please state why not) \_\_\_\_\_

**5. Information Governance Requirements:** When planning an audit, each project should be evaluated with regard to whether **Personal Identifiable Information (PII)** needs to be used. Unless there is genuine justification, all PII should be taken out to effectively anonymise the data for audit and research purposes. If you are unsure or need guidance and advice, please contact: [dataprotectionoffice@slam.nhs.uk](mailto:dataprotectionoffice@slam.nhs.uk) **Personal identifiable information (PII)** is any piece of information which can potentially be used to uniquely identify, contact, or locate an individual including name, address, full post code, date of birth, gender, ethnicity, NHS number, photographs, videos, audio-tapes etc.

<b>5(a) Source of data</b>	<input checked="" type="checkbox"/> Patient <input type="checkbox"/> Staff <input type="checkbox"/> Other (please specify)	
<b>5(b) Method of collection</b>	<input checked="" type="checkbox"/> Direct from subjects (interview or questionnaire) <input type="checkbox"/> From an information system (e.g. ePJS) <input type="checkbox"/> Other (please specify)	
<b>5(c) Will the data be fully anonymised?</b>	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
	<b>If yes, how:</b>  All participants will be assigned a unique identifier which will be used on all forms and in all databases.	If no, why not:
		If no, which personal identifiers will be used  If no, have you made arrangements to gain consent from data subjects? <input type="checkbox"/> Yes <input type="checkbox"/> No

<b>5(d) Where will the data be recorded?</b>	<input checked="" type="checkbox"/> Manual forms <input type="checkbox"/> Other (please specify) <input type="checkbox"/> Electronic forms <input type="checkbox"/> Electronic spreadsheet <input checked="" type="checkbox"/> Electronic database	
<b>5(e) Where will it be stored?</b>	<input checked="" type="checkbox"/> In a locked cabinet <input type="checkbox"/> Other (please specify) <input checked="" type="checkbox"/> In a locked office <input type="checkbox"/> On shared folder on SLaM network <input checked="" type="checkbox"/> On secure network outside SLaM - the IOP	
<b>5(f) Additional security arrangements</b>	<input checked="" type="checkbox"/> Password protected <input type="checkbox"/> Other (please specify) <input type="checkbox"/> Encrypted <input checked="" type="checkbox"/> Login required	
<b>5(g) Will the data be transferred outside SLaM</b>	<input checked="" type="checkbox"/> Yes, in an anonymised format <input type="checkbox"/> No <input type="checkbox"/> Yes, with identifiers <b>You must contact <a href="mailto:dataprotectionoffice@slam.nhs.uk">dataprotectionoffice@slam.nhs.uk</a> to register any transfer of personal identifiable information in advance.</b>	
	If yes, how Physically in person <input type="checkbox"/> Physically using a secure courier Physically using registered mail services <input checked="" type="checkbox"/> Electronically using nhs.net e-mail Electronically using encrypted portable media <input type="checkbox"/> Other (please specify)	
<b>5(h) Will the data leave the EU?</b>	<input type="checkbox"/> Yes (Please specify where and why) <input checked="" type="checkbox"/> No	
<b>5(i) Information Asset Owner:</b> This is the person responsible for the data	<b>Name:</b>	Gertrude Seneviratne
	<b>Job title:</b>	Consultant Psychiatrist
	<b>CAG:</b>	Psychological Medicine
	<b>Organisation:</b>	South London and Maudsley NHS Foundation Trust

**Data Collection (please answer ALL of the following questions)**

<b>6(a) Where from?</b> Audit data can be collected from many sources including: medical records/ePJS, nursing records, patients, clinicians, and other staff.	<b>Patients</b>
<b>6(b) How?</b> The data source will obviously influence the method used to collect data. E.g. If data is to be collected from patients the most appropriate method might be a survey or interview. If data is to be collected from medical records, it will be necessary to design a data collection proforma. Questionnaires, one-to-one interview, focus groups.	<b>Interviews with patients by MBU staff.</b>
<b>6 (c) How much?</b> As a guide, a sample should include a minimum of 30 cases and perhaps as many as 100. If the initial sample proves to be too small to provide data necessary, it can be added later.	<b>N/A – on an ongoing basis as standard clinical care on the MBU.</b>
<b>6 (d) Who?</b> Who will be responsible for collecting the data? Ensure the person identified understands their role.	<b>Eleanor Filgate and Afifa Ashfaque</b>
<b>6(e) Timescale?</b> Over what period is the data to be collected?	<b>N/A – on an ongoing basis as standard clinical care on the MBU.</b>
<b>6 (f) Pilot Audit? Y/N</b> In most cases it will be advisable to carry out a pilot to check quality of questionnaire, length of interview, etc. In light of the pilot audit findings, modifications to any of the above may need to be made.	<b>The tool has already been validated for use in such a setting.</b>
<b>7(a) Who will be affected by the outcomes of this project?</b>  Future patients to the service.	
<b>7(b) With whom and where will the final report be shared? i.e. Local Clinical Governance Committees, CAEC?</b>  Local Clinical Governance, Perinatal Psychiatry meetings and conferences, Researchers at the Institute of Psychiatry.	

**7(c) Who will take responsibility for disseminating the results of the project and following through recommendations and actions? And how and when will the recommendations and actions be evaluated, monitored and reviewed?**

Gertrude Seneviratne, Susan Pawlby, Eleanor Filgate and Afifa Ashfaque.

Recommendations and actions will be monitored and reviewed by the MBU MDT and managers on an ongoing basis.

**All completed projects must be followed up with a completed audit recommendations monitoring form, available on the SLaM Clinical Audit & Effectiveness Intranet site**<http://sites.intranet.slam.nhs.uk/cg/default.aspx>

#### 8) Audit Approval

##### **8(a) Information Governance Approval:**

IG Audit approval given by:

\_\_\_\_\_

Date Audit IG

approved: \_\_\_\_\_

##### **8(b) Clinical Audit Ethical approval given by:**

Clinical Audit Ethical approval given by: Psychological Medicine CAG Audit Committee

Date of Clinical Audit Committee

approval: \_29/01/2013\_

☐ Clinical Effectiveness and Audit Committee

☐ Drugs and Therapeutics Committee

☒ Directorate Clinical Governance/Audit Committee



## A.10 MBU ETHICAL APPROVAL



### Health Research Authority

**NRES Committee London - Camberwell St Giles**

(Formerly known as The Joint South London and Maudsley and Institute of Psychiatry  
Research Ethics Committee)  
Administrative address: Victoria House  
Capital Park  
Fulbourn  
Cambridge  
CB21 5XB

Tel: 01223 597750  
Fax: 01223597645

07 February 2012

Dr Susan Pawlby  
Developmental Psychologist  
Institute of Psychiatry, KCL  
PO 71  
Section of Perinatal Psychology  
De Crespigny Park, London  
SE5 8AF

Dear Dr Pawlby

**Study title:** Postpartum mothers with a psychotic disorder and their babies: the early relationship and later attachment security.  
**REC reference:** 08/H0807/14

Thank you for sending the progress report for the above study dated 03 February 2012. The report will be reviewed by the Chair of the Research Ethics Committee, and I will let you know if any further information is requested.

The favourable ethical opinion for the study continues to apply for the duration of the research as described in the application and protocol agreed by the REC, taking account of any substantial amendments.

<b>08/H0807/14:</b>	<b>Please quote this number on all correspondence</b>
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Yours sincerely

**Melanie Johnson**  
Administration Assistant

E-mail: melanie.johnson@eoe.nhs.uk

## A.11 COMPARISON GROUP ETHICAL APPROVAL



NRES Committee London - Dulwich

Health Research Authority

Skipton House

80 London Road

London

SE1 6LH

Tel: 0207 972 2559

Fax: 0207 972 2592

06 February 2013

Professor Carmine M Pariante  
Head of section  
CCBB, Institute of Psychiatry, KCL  
125 Coldharbour Lane  
London, UK  
SE5 9NU

Dear Professor Pariante

<b>Study title:</b>	<b>Does the maternal stress system during pregnancy modify stress responses in babies following birth?</b>
<b>REC reference:</b>	<b>07/Q0703/48</b>
<b>Protocol number:</b>	<b>VOK/SO 001</b>
<b>Amendment number:</b>	<b>Amendment no. 04 dated 30-06-2012</b>
<b>Amendment date:</b>	<b>30 June 2012</b>
<b>IRAS project ID:</b>	

The above amendment was reviewed at the meeting of the Sub-Committee held on 24 January 2013.

### **Ethical opinion**

There were no ethical issues

The members of the Committee taking part in the review gave a favourable ethical opinion of the amendment on the basis described in the notice of amendment form and supporting documentation.

### **Approved documents**

The documents reviewed and approved at the meeting were:

Document	Version	Date	
Advertisement	1.0	30 June 2012	
Participant Consent Form	4.0	30 June 2012	
Participant Information Sheet	4	30 June 2012	
Protocol	4	30 June 2012	
Notice of Substantial Amendment (non-CTIMPs)	Amendment no. 04 dated 30-06-2012	30 June 2012	
Covering Letter	Letter to Ms Hill from Dr Pariante	26 July 2012	

### **Membership of the Committee**

The members of the Committee who took part in the review are listed on the attached sheet.

### **R&D approval**

All investigators and research collaborators in the NHS should notify the R&D office for the relevant NHS care organisation of this amendment and check whether it affects R&D approval of the research.

### **Statement of compliance**

The Committee is constituted in accordance with the Governance Arrangements for Research Ethics Committees and complies fully with the Standard Operating Procedures for Research Ethics Committees in the UK.

We are pleased to welcome researchers and R & D staff at our NRES committee members' training days – see details at <http://www.hra.nhs.uk/hra-training/>

07/Q0703/48:

Please quote this number on all correspondence

Yours sincerely

PP



Dr Michael Philpot

Chair

E-mail: [claudesbeckles@nhs.net](mailto:claudesbeckles@nhs.net)

Enclosures: List of names and professions of members who took part in the review

Cop to:

Brennan Keith, King's College London

NRES Committee London - Dulwich

Attendance at Sub-Committee of the REC meeting on 24 January 2013

Name	Profession	Capacity	
Dr Michael Philpot	Consultant Psychiatrist	Expert	
Colin Standfield	Charity Worker	None	

## A.12 COMPARISON GROUP INFORMATION SHEET

# King's College Hospital



NHS Trust

Participant Information Sheet Version 3.0 date 27.05.10

Study title

Does the maternal stress system during pregnancy modify stress responses in babies following birth?

Invitation paragraph

We would like to invite you to take part in a research study. Before you decide, you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Talk to others about the study if you wish.

Part 1 tells you the purpose of this study and what will happen to you if you take part. Part 2 gives you more detailed information about the conduct of the study. Please ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

### PART 1

What is the purpose of the study?

We are studying the response to stress of babies born to mothers who have been depressed during pregnancy compared with babies whose mothers have not been depressed during pregnancy.

It is commonly believed that pregnancy is a time of good mental health; in fact, research suggests that depression during pregnancy is relatively common, occurring in up to 10% of pregnant women and its occurrence may also have an impact on baby outcome; it is therefore an important area for further research.

We are particularly interested in the endocrine system known as the hypothalamic-pituitary-adrenal (HPA) axis. The HPA axis is sometimes known as the “stress system” because it is activated by stress; we can measure the level of hormones from this system in the body. Cortisol is a major hormone from this “stress system”; during normal pregnancy, levels of cortisol become very high and are linked to the timing of birth. Of particular importance is that abnormally high levels of cortisol in pregnancy may be associated with premature birth and lower birth-weight babies. Depression is also associated with high levels of cortisol. Our previous research has suggested that pregnant women who are also depressed tend to have higher levels of cortisol & related hormones than those who are not depressed; also that their babies may have higher levels of cortisol and have a different hormone response to stress than the babies of women who have not been depressed in pregnancy. We wish to study this further, and look at other hormones related to this stress system and the way that genetic material (DNA) might influence the “stress system”.

Why have I been invited?

You have been invited to participate because you are pregnant and routine screening at your initial meeting with your midwife either has not identified you as someone who is suffering from depression or has identified you as someone who may be at risk of developing, or actually suffering from, depression. At Kings College Hospital, pregnancy services are linked closely with a team of specialists concerned with the mental health of pregnant women and new mothers. In total, we will include 204 pregnant women; 62 with depression and 142 who are not depressed; we will also include their babies after they are born.

Do I have to take part?

It is up to you to decide. We will describe the study and go through this information sheet, which we will then give to you. We will then ask you to sign a consent form to show you have agreed to take part. You are free to withdraw at any time, without giving a reason; this would not affect the standard of care you receive.

What will happen to me and my baby if I take part?

Your participation will be for up to 18 months, the study will go on for 3 years in total. There will be up to 5 study visits, each visit lasting from 30 minutes to 4 hours:

Visit 1 occurs when you are about 25 weeks pregnant. You will be seen by a clinical researcher who will ask you some background questions such as age, number of children, employment and ethnic origin, life events and childhood experiences. You will also complete some brief questionnaires, *a cognitive assessment*, and be asked about any symptoms of depression/anxiety. You will have a blood test to look at hormone levels and DNA for genetic studies (30mls blood - about 2 tablespoons). The researcher may also obtain background information from your medical notes. You will be asked to provide 6 specimens of your saliva on one day, during the week after this visit. You will be shown how to do this at visit 1. We are looking at cortisol ("stress hormone") levels in saliva samples.

When you are about 32 weeks pregnant we will ask you to repeat the saliva samples and complete some brief questionnaires and post them back to us. There is no need for a visit at this stage.

Following the delivery of your baby, the midwives will take a small section of the umbilical cord or some blood from the umbilical cord after it has been removed from your baby. We will use this to look at the baby's DNA for genetic studies. A study visit is not required at this stage; the sample will be collected by the researcher at a later point.

Visit 2 occurs 6 days after your baby is born. A clinical researcher will visit you at home to assess your baby's behaviour; they will use a standardised rating scale to make this assessment, which takes about 30 minutes. The researcher will collect a specimen of your baby's saliva shortly before and after the assessment, to look at levels of the stress hormone - cortisol, cotinine (a marker of exposure to tobacco) and DNA, and ask you to complete some brief questionnaires.

Visit 3 occurs the day before your baby is due for routine immunizations, 8 weeks after birth. At this time, as for visit 1, we will evaluate any symptoms of depression/anxiety. We will also

look at the interactions between you and your baby; to do this we will make a 3-5 minute video recording at your home, you will be asked to play and talk to your baby as you normally would. The video data will be analysed using existing, validated observational scales by a trained observer.

We will also obtain saliva samples from your baby, to look at “stress hormone” levels, cotinine and DNA. The clinical researcher will meet with you and your baby when you attend for the baby’s routine vaccinations, and show you how to obtain the sample by inserting a cotton swab between your baby’s upper lip & gum prior to & 20 minutes after the immunization. We would then ask you to repeat this procedure twice on the following day, 12 hours apart and in between feeds. You will also be asked to provide 6 of your own saliva samples on the day after your baby’s vaccination.

Visit 4 occurs the day before your baby is due for routine immunizations at one year of age. At this time, as for visit 3, we will evaluate any symptoms of depression/anxiety and observe interactions between you and your baby. We will also make an assessment of your child’s development at that stage, using a standardised rating scale. We will obtain saliva samples from you And your baby as for visit 3.

The study assessments are over and above those involved in standard care; normal treatment will not be withheld during the study and will continue as needed after this. All video recordings are treated as confidential, will not be used for commercial purposes and will be destroyed when the study is completed.

Expenses and payments.

You will be reimbursed for travel expenses you incur in attending for study visits and as a token of our appreciation you will receive a £20 gift voucher at the end of the study.

What will I have to do?

If you wish to take part in the study, you will be asked to sign the consent form at the end of this document; you will be given a copy to keep. You should be prepared to undertake the 4 study visits, as detailed above, either in your own home or at the hospital. Please also consider that in agreeing to participate, you are also providing consent on behalf of the baby you are expecting. If you have recent or current participation in other research studies please consider whether you should also participate in this study.

What are the possible disadvantages and risks of taking part?

You may experience some discomfort and/or bruising from the blood test. Although it is not painful, your baby may experience some distress on collection of saliva samples.

You may find the study visits/procedures inconvenient, particularly after your baby is born, as this is often a busy period for new mothers.

During the study, it is possible that other conditions are discovered of which you were unaware, which may have implications for your future health, or otherwise impacts on your interests. If anything is identified, your GP or hospital consultant will be informed, with your agreement.

What are the possible benefits of taking part?

There are no direct benefits to you of taking part in the study; however the knowledge gained from this study may be of help to other people in the future.

What if there is a problem?

Any complaint about the way you have been dealt with during the study or any possible harm you might suffer will be addressed; detailed information on this is given in Part 2.

Will my taking part in the study be kept confidential?

Yes. We will follow ethical and legal practice and all information about you will be handled in confidence; details are included in Part 2.

If the information in Part 1 has interested you and you are considering participation, please read the additional information in Part 2 before making any decision



## PART 2

What if there is a problem?

If you have a concern about any aspect of this study, you should ask to speak to the researchers who will do their best to answer your questions (tel. 020 7848 5009). If you remain unhappy & wish to complain formally, you can do this through the NHS Complaints Procedure; details can be obtained from the hospital.

In the event that something does go wrong & you are harmed during the research and this is due to someone's negligence then you may have grounds for a legal action for compensation against King's College Hospital Foundation NHS Trust or the study sponsor, King's College London, but you may have to pay your legal costs. The normal National Health Service complaints mechanisms will still be available to you.

Will my taking part in this study be kept confidential?

Yes, your confidentiality will be safeguarded during and after the study, which is conducted in accordance with the Data Protection Act 1998.

An identification code will be allocated to you and later to your baby. The information we collect will be recorded and put into electronic databases using this code rather than your name. Paper and electronic records are stored securely at the Institute of Psychiatry; the custodian of all study materials is Dr Carmine Pariante (Chief Investigator).

The researcher will have access to your clinical notes, and those of your baby, and by signing the consent from you will be giving consent for the researcher to examine your notes and those of your baby.

Study data will be analysed and results will be submitted for publication; your identity will not be revealed. Study data will be retained and may be used in future studies, if this happens, further Research Ethics Committee approval will be sought.

Authorised persons such as researchers, sponsors, regulatory authorities and Research and Development audit will have access to view identifiable data, for monitoring of the quality of the research.

Study data will be retained for 10 years after completion of the study; and will be disposed of securely.

You have the right to check the accuracy of data held about you and correct any errors according to local law and procedures.

Involvement of the General Practitioner/Family doctor (GP)

If you consent, we will write to your GP to inform them of your participation, and provide a brief study outline.

What will happen to any samples I give?

All samples from you and your baby will be processed then stored prior to analysis using the identification code already described. The researchers and laboratory scientists will have access to the samples; the researcher will be able to link your other study data to data from

the analysis of your sample by the identification code. All samples will be destroyed once the study is completed.

Will any genetic tests be done?

Yes, we will look at genetic material (DNA) which might be relevant to the development of stress and depression.

What will happen to the results of the research study?

The data and results from this study may be published in medical journals or used in scientific reports and may be communicated to the regulatory authorities. You will not be identified by name. Once the study has been completed, a report of the findings will be prepared for participants; you can request a copy using the contact details below.

Who is organising and funding the research?

The Chief Investigator, Dr Carmine M. Pariante is organising the research, which is sponsored by the Institute of Psychiatry, King's College London. Funding is being sought from medical research charities.

Who has reviewed the study?

All research in the NHS is looked at by independent group of people, called a Research Ethics Committee to protect your safety, rights, wellbeing & dignity. This study has been reviewed & given favourable opinion by The Kings College Hospital Research Ethics Committee.

Further information and contact details.

Chief Investigator:

Dr Carmine M, Pariante

Head of the Joint Sections of Perinatal Psychiatry & Stress, Psychiatry and Immunology

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Reader, MRC Clinician Scientist Fellow

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Tel. 020 7848 5009

You will receive a copy of the information leaflet and signed consent form to keep.

Thank you for reading this information sheet.

### A.13 COMPARISON GROUP CONSENT FORM

# King's College Hospital

NHS Trust

## Consent Form

**Title: Does the maternal stress system during pregnancy modify stress responses in babies following birth?**

Participant Identification Number: _ _ _ _ - _ _ _ _		Please initial each box
I confirm that I have read & understood the participant information sheet dated 27.05.10 (version 3.0) for the above study. I have had the opportunity to consider the information, ask questions & have had these answered satisfactorily.		
I understand that my participation is voluntary & that I am free to withdraw at any time without giving any reason, without my medical care or legal rights being affected.		
I understand that relevant sections of my medical notes & data collected during the study may be looked at by individuals from regulatory authorities or from the NHS Trust, where it is relevant to my taking part in this research. I give permission for these individuals to have access to my records.		
I agree to my GP being informed of my participation in the study.		
I agree that my GP or hospital consultant will be informed if, during the study, other conditions are discovered of which I was unaware.		
I agree to take part in the above study, and that my baby will be included after birth.		

Name of Participant: \_\_\_\_\_

Signature of Participant: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Investigator: \_\_\_\_\_

Signature of Investigator: \_\_\_\_\_ Date: \_\_\_\_\_

When completed, 1 for patient; 1 for researcher site file; 1 to be kept in me

### Service Evaluation Project

Why has our recovery rate dropped? An audit examining waiting times, starting scores and length of treatment in relation to recovery in an IAPT service

SUPERVISED BY DR NICHOLAS McNULTY

LAMBETH IMPROVING ACCESS TO PSYCHOLOGICAL THERAPIES (IAPT) SERVICE

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## **Abstract**

The Improving Access to Psychological Therapies (IAPT) initiative was created to provide mental health services for those experiencing mild to moderate depression and anxiety. IAPT is commissioned on the basis that it achieves adequate performance on a number of 'Key Performance Indicators', one of which is the proportion of clients who 'move towards recovery' following treatment. The impetus for the current evaluation was a significant reduction in the proportion of clients' recovering within an IAPT service. Data for this clinical audit was obtained from IAPT electronic records (*IAPTus*). Three factors (waiting times, clinical contact and starting scores on the PHQ-9 and GAD-7) were examined and explored separately for each level of care (i.e., Step 2 and Step 3). These factors were analysed in relation to recovery and compared between periods of low and high recovery within the service. Results reveal that there was little change in the severity of clients' starting scores between the periods of low and high recovery. Increased waiting times in the period of low recovery was not associated with recovery status. The amount of clinical contact was related to recovery at both time periods. Limitations and implications of the findings are discussed.

## Introduction

The Improving Access to Psychological Therapies (IAPT) initiative was introduced in England to provide widespread access to primary mental health services for those experiencing mild to moderate depression and anxiety. Since its inception in 2007, demand has continued to increase. There are now more than 200 IAPT sites in England and the number of national referrals has reached more than 800,000 (HSCIC, 2014). Although the increase in demand is a credit to the success of the IAPT initiative, it presents questions around how to best manage the continued delivery of effective evidence-based treatments in the face of such demand.

IAPT operates a stepped model of psychological intervention such that 'low intensity' interventions are the first line treatment for most clients before more intensive interventions are offered. Low intensity interventions are primarily delivered by 'psychological well-being practitioners' (PWP) who are trained to deliver evidence based low intensity interventions for depression, anxiety or stress as recommended by National Institute for Clinical Excellence guidelines (NICE, 2004/9). 'High intensity' interventions are reserved for those who have not improved following low intensity interventions or for whom low intensity treatment is not deemed suitable. In these cases the client receives an episode of individual CBT by an accredited CBT therapist.

Access to IAPT services may be via referrals from health and social care professionals or service users referring themselves directly. In the service studied, potential clients are screened based on referral information and if there are no obvious indicators to warrant refusal at that stage (e.g., psychosis), clients are contacted and a telephone assessment ("triage") date is offered. Those clients who are deemed suitable for IAPT input following triage are assigned to one of two levels of care (i.e., low or high intensity intervention) based on clinical need. Given the number of referrals that most IAPT services now receive, most services have a waiting list for triage and start of treatment (Department of Health, 2011). Overall, length of waiting times will depend on the match between demand and service capacity, and this applies at both levels of intervention.

IAPT is commissioned on the basis that it can prove its effectiveness in delivering evidence based treatments for common mental health disorders (Richards & Suckling, 2008). At present, IAPT services are evaluated on a number of 'key performance indicators' (KPIs), one of which is the number of clients who 'move towards recovery' following treatment. A client has moved towards recovery if they start treatment as a 'case' (scoring above a threshold on

at least one standard measure of depression or anxiety) and end treatment as a 'non-case' (below threshold on both measures). As part of routine practice within IAPT services, clients complete measures of depression and anxiety at each clinical contact allowing for clinical contact and change to be tracked over time. Outcome monitoring of this kind is a strength of the IAPT model in that service and client factors associated with outcomes can be examined even when clients do not complete therapy.

There is relatively little research which has examined factors related to recovery within IAPT services. The most comprehensive report is one published in 2011 by Gyani and colleagues which examined factors related to recovery in the first year of IAPT and synthesized data from 32 sites (Gyani et al., 2011). Findings from this report suggest that 1) client's with higher starting scores are less likely to recover and receive a greater number of treatment sessions than those with lower starting scores, 2) self-referring clients are no more likely than GP referred clients to recover, and 3) in general, a greater number of treatment sessions is associated with recovery. Findings also demonstrated that those services that had more experienced CBT therapists within a clinical team and those with a greater 'step-up' rate had better recovery rates. Finally, it was noted that primary diagnosis was significantly associated with recovery but there was a pervasive problem of inadequate reporting of client diagnosis.

Many of these findings are consistent with other psychotherapy research which has examined factors in relation to outcomes for CBT interventions. In line with Gyani and colleagues (2011), there is evidence to suggest that CBT is less effective the more severe the presenting problem (Hagby et al., 2006). However, where Gyani and colleagues found an effect of treatment length on recovery, a meta-analysis which synthesised data from over 33 studies, presents little evidence to suggest that the modality of treatment or length of treatment has an impact on outcome (Hagby et al., 2006). There is comparatively little research on the impact of waiting times on recovery; however, a study conducted in a primary care setting which compared outcomes in a group who immediately received a guided self-help intervention in comparison to a wait list condition, found no negative impact of an 8-week wait on outcomes (Lucock, Kirby & Wainwright, 2011).

### **The present audit**

The present investigation considered what factors might be related to recovery within a London borough IAPT service. At the time of this audit, the rate of recovery within this service was 37%, a rate well below the standard which is expected by the Department of Health (i.e.,



a recovery rate of 50%; Department of Health, 2011) and below the average service recovery rate of 46%. The service was concerned to understand and to urgently address the declining rate of recovery.

In the months prior to this clinical audit, a number of changes and new pressures were presenting to the service. Firstly, in line with most IAPT services, the number of referrals to the service had steadily increased since the service began: 350 referrals/month in 2010 to over a 1000 referrals/month in the latter part of 2012. In addition, this time was also marked by changes and reductions to a number of other psychotherapy services and Community Mental Health Teams (CMHT's) within the borough and it was hypothesised that this too might be contributing to the sharp increase in referrals. Due to the increase in referrals, waiting times for assessment and treatment had increased and low-intensity therapists were facing pressure to engage clients for fewer sessions to open up access to as many clients as possible. The service had also undergone an 8% reduction in staff in the preceding nine months of the audit.

The aim of this audit was to examine the impact of two service related factors (waiting times and number of clinical contacts) and one client factor (severity of anxiety and depression at initial assessment) in relation to a client's recovery status at the completion of treatment. It is hypothesised that recovery status will be negatively associated with starting scores and positively associated with greater number of clinical contacts. As the increase in waiting times coincided with the decline in recovery rate, it was hypothesised that longer waiting times would be associated with poorer recovery.

## **Method**

A cross-sectional correlational design was used within this clinical audit. The period when the recovery rate was low (hereafter referred to as Time 2) was compared with the same time the previous year when the recovery rate was higher (hereafter referred to as Time 1). Three factors: waiting times, number of clinical contacts and starting scores on depression (PHQ-9) and anxiety (GAD-7) were calculated and examined separately for each level of intervention (i.e., low-intensity intervention or "Step 2" and high-intensity intervention or "Step 3"). These factors were examined in relation to recovery at two time points.

## Sample

Data were extracted from the *IAPTus* service database within a South London IAPT service. The borough is the fifth most deprived borough in London and the 14th most deprived in England. Thirty-two percent of households are considered low income and over a third of residents are from ethnic minorities (Lambeth First, 2011). Data were extracted from the database to identify those clients who received any form of low intensity treatment (psychoeducation, computerised CBT, guided self-help, group intervention or workshop) or received an episode of individual CBT treatment (with a high-intensity therapist) within a two month period (September and October) in 2011 and 2012 and had been discharged by the time of the analysis.

Staffing levels at the two time periods were 41.5 therapists<sup>18</sup> in September/October 2011 and 36.5 therapists in September/October 2012. The ratio of Step 2 therapists to Step 3 therapists did not differ across the two time periods (46% of clinicians were Step 2 therapists and 54% were Step 3 therapists).

## Measures

*Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001)*

The PHQ-9 is a nine item self-report measure of depressive symptoms used routinely within IAPT services. Higher scores indicate greater severity. Scores range from 0-27. A score of nine is considered the clinical cut off and thus a score of nine or below is required for IAPT 'recovery' (NHS England, 2014).

*Generalised Anxiety Disorder Questionnaire (GAD-7; Spitzer et al., 2006)*

The GAD-7 is a seven item self-report screening measure for generalised anxiety disorder and used in IAPT services as a measure of anxiety symptomatology. Scores range from 0-21. A score of seven is considered the clinical cut off and thus a score of seven or below is required for IAPT recovery (NHS England, 2014).

## Procedure

The data set includes only those who were considered 'cases' at triage (scores above the clinical cut off on either the PHQ-9 or the GAD-7) and that had at least two questionnaire scores (to

---

<sup>18</sup> whole time equivalent

allow ‘recovery’ to be calculated). Thus, this audit excludes those who failed to engage following the initial referral and those who failed to make contact following triage.

Once data were reduced to only include those clients who met “caseness” at triage and had at least two clinical contacts, a total number of 988 client records were reviewed (454 at ‘Time 1’ and 534 at ‘Time 2’). Data pertaining to these client records were then obtained from *IAPTus* including information about contact with the service (e.g., date of referral/ discharge and number of treatment sessions) and scores of depression (PHQ-9) and anxiety (GAD-7). Diagnosis was not included in the present dataset due to inconsistent and unreliable reporting across cases (see Table 1 for a list of included variables).

This investigation was considered a clinical audit and therefore did not require ethical review.

## Results

*Table 1. Included Variables*

Variable	Description	Value
Wait to Triage	Difference between Date of Referral to Date of Triage	Number of Days
Wait to Treatment	Difference between Date of Triage to Date of First Treatment Session (i.e., second clinical contact)	Number of Days
Recovery <sup>19</sup>	If PHQ-9 discharge $\leq 9$ and GAD-7 discharge $\leq 7$ =recovered	recovered or not recovered
Number of Treatment Sessions	Number of attended clinical contacts excluding first clinical contact (triage)	Count
Starting PHQ-9 score	PHQ-9 score at triage	Value (range: 10-27)
Starting GAD-7 score	GAD-7 score at triage	Value (range: 8-21)

## Descriptive Statistics

<sup>19</sup> For some disorders (e.g., Panic, PTSD, OCD), disorder-specific measures are used and recovery is defined by a cut off score for that particular measure. Those cases which had a disorder specific measure were still included in this evaluation but recovery for that case was defined in terms of the PHQ-9 and GAD-7. This did not significantly change the recovery rates (i.e., overall recovery rates remained equally low even when disorder specific measures of recovery were included) and retains consistency with the analyses completed by Gyani and colleagues (2011).

Prior to analyses, the reason for discharge was investigated for each time period to identify the proportion of cases that had been given a 'dropped out' of treatment code within the IAPTus database. At Step 2, 29% had dropped out at Time 1 in comparison to 22% at Time 2. At Step 3, 17% had dropped out at Time 1 and 19% at Time 2.

Table 2 displays the number of discharges and proportion of recovery at the two time periods. At both steps, the proportion who recovered decreased: from 47% to 45% at Step 2 and from 46% to 38% at Step 3. Chi-square analyses revealed that there was no significant difference between the time periods on recovery status, although the difference was approaching significance at Step 3 (Step 2:  $\chi^2(1) = 0.28, p = .60$ ; Step 3:  $\chi^2(1) = 3.02, p = .08$ ).

*Table 2. Number of discharges and proportion of recovery at a period of low and high recovery*

	High Recovery (Time 1)		Low Recovery (Time 2)	
	N	%	N	%
Step 2				
recovered	94	47%	132	45%
not recovered	106	53%	164	55%
total	200	100%	296	100%
Step 3				
recovered	117	46%	91	38%
not recovered	137	54%	147	62%
total	254	100%	238	100%

## Comparisons between Time 1 and Time 2

A series of parametric t-tests were conducted to examine if there were significant differences between the time periods in terms of waiting times, starting scores and number of clinical contacts. All variables were normally distributed except the waiting time variables which were positively skewed; however, given this test was in relation to a large sample and the variances between the two groups were not significantly unequal, a parametric t-test was selected. Where multiple comparisons were conducted the Bonferroni correction was applied. Results are presented by each step separately. Means and standard deviations are presented in Table 3.

*Table 3. Means and standard deviations for each variable at a period of low and high recovery*

	High Recovery (Time 1)		Low Recovery (Time 2)	
	Mean	SD	Mean	SD
Step 2				

Wait to Triage*	10.35	16.06	21.72	18.19
Wait from Triage to Treatment*	19.42	22.75	17.70	26.53
Starting PHQ-9	15.71	5.56	14.84	5.28
Starting GAD-7	14.54	4.37	14.04	4.28
Number of Treatment Sessions	5.08	3.04	4.71	3.29
Step 3				
Wait to Triage*	17.19	33.86	22.91	24.93
Wait from Triage to Treatment*	21.96	35.56	30.51	44.29
Starting PHQ-9	17.54	5.32	17.35	5.75
Starting GAD-7	14.83	4.27	15.79	4.06
Number of Treatment Sessions	11.06	8.40	9.52	7.18

\*value in number of days

At Step 2, t-tests revealed that there was a significant difference in wait to triage ( $t(492)=-7.15$ ,  $p<.0001$ ) with clients waiting on average 11 days longer to be triaged at Time 2. There was no significant difference between the time periods in terms of waiting time from triage to treatment ( $t(492)=.75$ ,  $p=.46$ ), starting scores (PHQ-9:  $t(494)=1.7$ ,  $p=.08$ ); GAD-7:  $t(494)=1.26$ ,  $p=.21$ ) or total number of treatment sessions ( $t(494)=.91$ ,  $p=.36$ ).

At Step 3, t-test analyses revealed that there was significant difference between Time 1 and Time 2 in terms of wait to triage, with clients waiting on average 6 days longer to be triaged at Time 2 ( $t(490)=-2.30$ ,  $p=.002$ ). There was an average increase in wait from triage to treatment of 9 days at Time 2 but this did not reach significance when the Bonferroni correction was applied ( $t(490)=-2.37$ ,  $p=.02$ ). On average, clients were presenting with GAD-7 scores one point higher at Time 2 compared to Time 1 but this difference was only approaching significance ( $t(490)=-2.54$ ,  $p=.01$ ). There was no difference in PHQ-9 scores between the time periods ( $t(490)=0.38$ ,  $p=.70$ ). Finally, clients were having fewer treatment sessions at Time 2 but this difference is not significant when the Bonferroni correction was applied (nine versus 11 sessions,  $t(490)=2.18$ ,  $p=.03$ ).

## Variables related to Recovery

Next the extent to which starting scores, clinical contact and waiting times may be differentially related to recovery at the two time points was explored. Results are presented by each Step separately. Means and standard deviations are presented in Tables 4 and 5.

*Table 4. Step 2: Means and Standard Deviations for Each Variable by Recovery Status*

	High Recovery (Time 1)		Low Recovery (Time 2)	
	Mean	SD	Mean	SD
Wait to Triage				
Recovered	7.32	10.48	21.44	18.15
not recovered	13.03	19.40	21.94	18.27
Wait from Triage to Treatment				
recovered	20.36	26.00	16.55	24.89
not recovered	18.92	19.28	18.64	27.84
Starting PHQ-9				
recovered	14.81	5.38	13.58	5.23
not recovered	16.50	5.63	15.87	5.12
Starting GAD-7				
recovered	13.71	4.59	12.64	4.26
not recovered	15.27	4.04	15.18	3.96
Number of Treatment Sessions				
recovered	6.19	2.82	5.76	2.94
not recovered	4.14	2.93	3.87	3.32

*Table 5. Step 3: Means and Standard Deviations for Each Variable by Recovery Status*

	High Recovery (Time 1)		Low Recovery (Time 2)	
	Mean	SD	Mean	SD
Wait to Triage				
Recovered	15.95	26.19	20.04	24.70
not recovered	18.26	39.33	24.64	25.00
Wait from Triage to Treatment				
recovered	23.46	37.90	39.64	55.25
not recovered	22.18	34.37	27.29	40.76
Starting PHQ-9				
recovered	16.36	5.6	15.24	6.36
not recovered	18.64	4.5	18.61	4.94
Starting GAD-7				
recovered	13.9	4.57	14.49	4.18
not recovered	15.6	3.74	16.55	3.78
Number of Treatment Sessions				
recovered	11.73	7.04	12.34	6.70
not recovered	10.70	9.48	7.78	6.96

## Step 2

At both Time 1 and Time 2, significant differences between the recovered and non-recovered groups were only observed for the number of treatment sessions. There was a significant difference between the recovered and non-recovered group in terms of the number of

treatment sessions completed, with recovered clients receiving on average 2 sessions more than those in the unrecovered group (Time 1:  $t(198)=-5.03$ ,  $p<.001$ ; Time 2:  $t(294)=-.511$ ,  $p<.001$ ).

In terms of starting scores, there were only differences between the recovered and non-recovered group at Time 2 (PHQ:  $t(294)=3.79$ ,  $p<.001$ ; GAD:  $t(294)=5.3$ ,  $p<.001$ ). At Time 1, those in the recovered group had lower PHQ ( $t(198)=2.17$ ,  $p=.03$ ) and GAD ( $t(198)=2.56$ ,  $p=.01$ ) scores at the start of treatment in comparison to the non-recovered group but this was not significant when the Bonferroni correction was applied.

Only wait to triage at Time 1 ( $t(165.28)=2.63$ ,  $p=.009$ ) approached significance. Wait to triage was not significant at Time 2 ( $t(292)=.24$ ,  $p=.81$ ) nor was wait from triage to treatment at either time period (2011:  $t(197)=-.446$ ,  $p=.66$  and 2012:  $t(292)=.673$ ,  $p=.50$ ).

### *Step 3*

At Time 1, only starting scores were related to recovery, with those who recovered starting with lower PHQ scores ( $t(215.21)=3.52$ ,  $p=.001$ ) and GAD scores ( $t(216.48)=3.2$ ,  $p=.002$ ). There was no significant differences between those who recovered and those who didn't recover in terms of the other variables: waiting times (Wait to triage:  $t(243)=.53$ ,  $p=.60$ ; Wait from Triage to Treatment:  $t(243)=-.28$ ,  $p=.78$ ) or number of treatment sessions ( $t(238.45)=-.97$ ,  $p=.34$ ).

In contrast, there were differences between the recovered and non-recovered groups at Time 2 across almost all variables. The recovered group received more treatment sessions ( $t(235)=-4.97$ ,  $p<.001$ ) and waited longer from triage to treatment ( $t(146)=-1.83$ ,  $p=.05$ ) but this only approached significance when the Bonferroni correction was applied. Those in the recovered group also started with significantly lower starting scores on both the PHQ and GAD at Time 2 (PHQ:  $t(154.17)=4.28$ ,  $p<.001$ ; GAD:  $t(235)=3.91$ ,  $p<.001$ ). It was only wait to triage which was not significantly related to recovery at Time 2 ( $t(234)=1.38$ ,  $p=.17$ ).

### **Summary**

Overall, results reveal that there were differences on only some of the investigated variables between the periods of high and low recovery. As expected given the substantial increase in referrals, waiting times for triage had significantly increased for service users at both levels of

intervention. There was no difference in the severity of clients presenting to the service at Time 2. There was a decrease, but not significant one, in the number of treatment sessions clients received at Step 3 between Time 1 and Time 2.

In support of the hypothesis, lower starting scores were consistently associated with recovery. There was partial support for the hypothesis that there would be an association between number of treatment sessions and recovery. At Step 2, there was a consistent association between the number of treatment sessions and recovery but at Step 3, the number of sessions was only associated with recovery at Time 2. The hypothesis that waiting times would be related to recovery was not supported by the data.

## **Discussion**

The present investigation was interested in exploring the impact of waiting times, client starting scores and number of clinical contacts in relation to recovery at two different time periods as part of a clinical audit within an IAPT service. Results reveal that 1) client starting scores were consistently associated with recovery, but this relationship was not different between Time 1 and Time 2 nor was there a significant change in the severity of clients between the two periods; 2) increased waiting times at Time 2 were not associated with recovery status and 3) the amount of clinical contact was associated with recovery at both levels of intervention.

### **Waiting times**

The results from this evaluation suggest no role of waiting time in relation to the decline in recovery. Although waiting times undoubtedly increased during the period of low recovery, particularly in terms of how long clients waited for triage, waiting times were not significantly associated with recovery at either time period. This finding was surprising but is in line with other research in primary care (Lucock et al., 2011). A limitation of the present investigation is that only those cases who attended triage, and who attended one further clinical contact, were included in the analyses. It is conceivable that this may underestimate the impact of waiting times, if longer waiting times result in some clients being less likely to attend triage as has been reported elsewhere (e.g., Mander, 2014) or more likely to 'drop out' between triage and the beginning of treatment.



## Baseline Severity

Results from these analyses suggest that the observed decline in recovery is not due to an increase in the severity of client's starting scores at Time 2. Although those with higher starting scores were shown to be less likely to recover, this was consistent at both time periods and for both steps. Overall, this replicates recovery data published from the first year of IAPT services (Gyani et al., 2011) and is a reflection that those clients with higher scores are required to make greater change in order to move below 'caseness'. This highlights a limitation of the definition of recovery used by IAPT services which does not account for those who make significant change but do not move below caseness by the end of treatment. Alternative definitions to recovery (i.e., 'reliable change' index; NHS England, 2014) which are currently being introduced nationally may be more sensitive in differentiating those who do and do not benefit from treatment within IAPT services.

Although the present investigation explored if the severity of depression and anxiety in clients had changed over time or was associated with recovery, it does not provide information about the extent to which client 'complexity' may have changed over time. Certainly within the service where the present investigation was conducted, the clinical team was of the opinion that over time there has been an increase in the complexity of clients presenting to the service: in particular, that clients are now presenting with greater co-morbidity (Axis I and II) and greater social adversity. A more detailed analysis would need to be completed to account for these types of client differences. There are plans for the Mental Health Clustering Tool (Department of Health, 2012) to be used more routinely by IAPT services which would allow for different combinations of need and severity to be measured. It is possible that routine collection of 'level of need' in this way will allow for some of these kinds of questions to be answered more readily.

## Length of Treatment

The number of treatment sessions did appear to be an important factor in relation to recovery at both time periods and for both levels of intervention. Contrary to expectations, there was no significant difference in clinical contacts being offered at Step 2 between the time periods examined. This is in spite of the service being more stringent about the number of sessions offered by PWP's at Time 2. However, the heterogeneity of treatment modalities within Step 2 should also be acknowledged when considering this finding. There are some low intensity interventions, such as computerised CBT allow for up to twelve sessions and this differs from workshops and guided self-help which involve substantially less clinical contact but are still

considered within the same level of intervention. Thus, it is possible that the effect of reducing the number of guided self-help sessions was masked by other types of intervention which allow for greater clinical contact at lower therapist cost. Unfortunately, the IAPT database does not readily allow for analyses to be completed based on individual types of treatment within each Step making this question beyond the scope of the present investigation.

Visual inspection of the data also highlighted that during the period of lower recovery (Time 2), a greater proportion of clients were discharged following only one treatment session. It is hypothesised that many of these cases may be a reflection of those clients who were invited for a 'further assessment' session which were introduced within the service to better determine IAPT suitability if suitability was not clear from the telephone triage. This poses a question as to whether or not these cases should be included in the recovery rate. It may not be appropriate to consider such cases 'unrecovered' if they are directed elsewhere for more appropriate treatment and thus are not actually treated within IAPT. Arguably, there is a distinction between those who have only two clinical contacts because they were not well suited to the service, in contrast to those who did not engage with treatment (i.e., dropped out), and the former may not be a fair reflection of IAPT performance.

A consistent finding from these analyses is that a greater number of clinical contacts was associated with recovery at both steps. On average, those who had recovered had six and 11-12 clinical contacts at Step 2 and Step 3, respectively. The association with recovery was significant at both time periods for Step 2, but only significant at Time 2 for Step 3 when the difference in number of clinical contacts between those who did and did not recover widened. One plausible explanation for this finding at Step 3, is that the service is getting better at identifying those who are not appropriate for CBT and therapists are not 'endlessly' treating patients if they are not progressing or engaging with treatment. Indeed, the service had been encouraging clinicians to do this more actively at Time 2 due to the stark increase in referrals. Another possibility is that therapists may feel implicit or explicit pressure to discharge clients as soon as possible due to the increase in waiting times within the service. Regardless of the reason for fewer sessions, these results suggest that high intensity interventions offered in this IAPT service are on average, lower than that which is recommended by NICE guidelines. A finding that replicates data published in the National Audit of Psychological Therapies, which has reported that only 30% of clients receive the minimum number of sessions recommended by NICE guidelines (Royal College of Psychiatrists, 2011). Given that NICE recommends an episode of treatment being at least ten sessions for most disorders (e.g., 16-20 for moderate depression, 12-15 for Generalised Anxiety Disorder, up to 14 for social phobia, at least 10 for

Obsessive Compulsive Disorder, 8-12 for Post-traumatic Stress Disorder), it is possible that inadequate clinical contact may explain the relationship between number of clinical contacts and recovery in this audit.

## **Dissemination**

Results from this investigation were presented to the clinical leads of the service. In addition, the findings were discussed with others within and outside the clinical team (e.g., Centre for Anxiety Disorders and Trauma; CADAT). From this, a number of recommendations were suggested and areas for subsequent evaluation were identified.

## **Recommendations for future research**

Improve sensitivity in predicting those who do and do not make change in treatment by:

1. Examining how service and client factors are related to recovery, both when traditional and alternative recovery criteria is used (i.e., 'reliable change')
2. Exploring moderators of recovery including diagnostic groups, co-morbidity, client complexity and mode of therapy. This will require consistent reporting of these factors within the IAPT database
3. Identifying patterns of drop-out (e.g., how they may differ by treatment type and diagnosis)
4. Consider therapist factors in relation to recovery including therapist drift and/or how therapist experience may relate to clinical outcomes with certain patient groups

## **Service Changes Following the Audit**

There were a number of actions taken within the service following dissemination of these findings. First, clinicians were provided with an opportunity to reflect on their own client outcomes to identify areas for continued professional development. This involved clinicians providing outcome data on all of their discharged clients over a six month period and outcomes were compared across therapists. Clinicians were encouraged to develop action plans in supervision to address individual recovery issues. As part of this process, the use of the Cognitive Therapy Scale Revised (CTS-R; Blackburn et al., 2001) within supervision and as part of appraisals for high intensity therapists was increased. Clinicians with notably high recovery rates were also invited to share suggestions which have been compiled as a service

resource. Overall, the individual outcome review highlighted particularly poor outcomes for clients with a diagnosis of Post-Traumatic Stress Disorder; thus, this became a particular focus for training, supervision and audit. Finally, following consultation with Step 3 clinicians, a rolling programme of refresher training in disorder specific CBT protocols was implemented across four IAPT services in the Trust.

## Limitations

The present audit does have some limitations. Firstly, this investigation presents data from a clinical audit and is a reflection of 'real life' clinical data. As a result, the analyses are restricted to that which can be conducted within a routine clinical service. For example, we were unable to include diagnostic group in these analyses due to the unreliable inclusion of this information in the available dataset. The available dataset was also limited in that data for Step 3 included those cases who failed to recover following a low intensity intervention and were 'stepped up' to high intensity, as well as those who only received a high-intensity intervention. Ideally, these groups would be examined separately. This dataset also fails to represent those cases that dropped out of treatment following triage (i.e., did not have two clinical contacts), and within the sample studied that did have at least two clinical contacts, it is not clear if there were significant differences in the 'reason for discharge' over time or if this was related to recovery. Nevertheless, the data presented herein do represent performance data of the kind that is presented to commissioners and thus we would argue is 'ecologically valid' in this respect. Secondly, a limitation of a correlational design that examines many factors is that there is a heightened risk of Type I errors. More controlled investigations are required to replicate these findings and to identify what may be mediating or moderating relationships between client and service factors and recovery.

Finally, there are a number of other factors that may influence recovery which were not included in this audit. In particular, it is not clear to what extent this reduction in recovery may also be due to client characteristics (e.g., personality factors, co-morbidity, psychosocial stress). The growth of IAPT in terms of awareness and accessibility means that services may now be faced with accommodating a wider range of clients than was once the case; although this warrants formal investigation. It may be that guidelines around managing client complexity need to be more clearly explicated (in terms of referral, assessment and treatment) and provision of additional training and resources be considered in order to adequately meet the needs of referrals that are now being received by IAPT services. The quality of CBT delivery within routine clinical settings can also vary and this may be another factor related to treatment

outcomes (see Shafran et al., 2009 for a discussion). Thus, exploring additional client and therapist factors in relation to IAPT recovery are likely to be fruitful avenues for future research.

The present audit highlights a number of considerations as the demand for IAPT continues to increase and the nature of referrals to IAPT services continues to evolve. In particular, this evaluation suggests that those receiving high intensity interventions require a reasonable amount of clinical contact to reach recovery and that service pressures may challenge clinicians to offer treatments of a clinically recommended length. As the IAPT model becomes more and more prevalent across diagnoses and levels of care, identifying factors related to recovery are going to be critical in maintaining the integrity of mental health services and achieving adequate levels of recovery.

#### Learning Objectives

1. Within IAPT services, service defined recovery appears to be associated with the severity of the presenting problem and the number of clinical contacts received as part of treatment
2. Within IAPT services, waiting times do not appear to be related to service defined recovery status, but further research is required to determine the impact of waiting times on client's initial engagement with IAPT services
3. Early discharge for some clients, whether planned or due to drop out, may mean that clinical contact within IAPT services is not in line with guidelines recommended by NICE and this may negatively impact client recovery

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## **Appendix**

### **A.1 Published Paper**